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THE

PHILOSOPHY OF EDUCATION

OR THE

PRINCIPLES AND PRACTICE OF TEACHING

IN FIVE PARTS

PART I. ON METHOD AS APPLIED TO EDUCATION
PART II. ON THE CULTIVATION OF THE INTELLECTUAL AND MORAL FACULTIES
PART III. ON THE COMPARATIVE ADVANTAGES OF DIFFERENT METHODS AND SYSTEMS OF INSTRUCTION
PART IV. ON THE APPLICATION OF DIFFERENT SYSTEMS AND METHODS TO THE VARIOUS BRANCHES OF ELEMENTARY EDUCATION
PART V. ON SCHOOL ORGANISATION AND DISCIPLINE

BY T. TATE, F.R.A.S.

AUTHOR OF VARIOUS SCIENTIFIC AND EDUCATIONAL WORKS.

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PREFACE.

THIS work is the result of the labour and reflection of many years; it, in fact, embodies the experience of my life as a practical educator. It contains an exposition of all the leading principles upon which my other works on education have been written; and in order to understand, fully, the drift and purpose of the one, the teacher must study the expositions and principles of the other. Wherever I have adopted the ideas of others, I have always, to the best of my recollection, made a due acknowledgment of the obligation.

I am not acquainted with any work which really treats of the philosophy of education in connection with the practice of it. Our books on education are either too purely speculative, or too exclusively empirical, and, so called, practical.

My most earnest desire is, that this work may be the means of directing the attention of the practical educator to the philosophy of education, and to the development of those systems and methods which are best calculated to establish in our schools a thoroughly sound and enlightened education.

T. TATE.

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THE
PHILOSOPHY OF EDUCATION;
OR,
THE PRINCIPLES AND PRACTICE OF TEACHING.

INTRODUCTION.

As man is not only a physical, but also a thinking and an accountable being, so therefore education, in its comprehensive sense, may be viewed in three aspects—that is, in relation to our physical, intellectual, and moral nature. I here propose to consider the last two departments of education ; to determine, if possible, the best methods whereby our nature may be educated intellectually and morally. The end of all education should be, to promote man's happiness, not only during his present transitory existence, but throughout the eternity which is to follow.

The principal means of education in this country are —school instruction, books, public lectures and discourses, and exhibitions of works of science and art. But the efficiency of all the popular means of education are dependent upon, and in fact inseparably connected with, the primary instruction of the schoolroom. The treasures of our literature and science are inaccessible to him who has not been taught the first rudiments of language. Hence it is, that the brilliant productions of the poetic genius, or the gigantic creations of the science of any particular age, afford us no data for estimating the state of education among the mass of the people of that age. On this subject John Forster eloquently observes :—"Long after the brilliant show of talent, and the creation of literary supplies for the national use, in the early part of the last century, the deplorable mental condition of the people remained in no very great degree altered. To pass from beholding that bright and sumptuous display in order to see what there was corresponding to it in the subsequent state of the popular cultivation, is like going out from some magnificent apartment, with its lustres, music, refections, and assemblage of elegant personages, to be beset by beggars in the gloom and cold of a winter night."

The schoolmaster must begin the work of education. The subject of method, therefore, should be treated chiefly in relation to the work of the schoolmaster.

EDUCATION IS A SCIENCE AS WELL AS AN ART.

Practical teachers, as well as the public generally, had, until recently, regarded education more as an art than as a science, consisting merely of a few arbitrary and empirical rules which may be modified or altered to suit the tastes and attainments of the teacher, or to answer the opinions and circumstances of the managers of schools. This unfortunate prejudice has, no doubt, had its origin, to a great extent, in the fact that the greater portion of teachers were unfit for their office. Few minds were capable of viewing education apart from its miserable and unworthy representatives, or dissociating it from the operation of the schools which came within the sphere of their own immediate observation.

Twenty years ago, anybody was considered good enough for a schoolmaster. If a tradesman failed in business, he was thought to be learned enough for a schoolmaster; a feeble, sickly youth, who was not considered strong enough to practise any regular trade, was thought to be sufficiently qualified to undertake the duties of school keeping; if a mechanic happened to get a limb fractured he would, as a matter of course, save himself from starvation by opening a school; when a man who had seen better days applied to the parish officers for out-door relief, they gravely debated the question, whether it was more expedient to send him to the quarry to break stones, or to confer upon him the office of parish schoolmaster.* Such was the low estimate formed of the qualifications requisite for a schoolmaster. This state of things, doubtless, tended to retard the progress of education both as a science and an art, for the odium attached to the office, as well as the insufficiency of the remuneration, prevented properly qualified persons from undertaking the duties. But within the last fifteen years, a change in public opinion has been gradually taking place: the working and middle classes have been led to see the value of a sound elementary education, and thereby to estimate more highly the difficulties and importance of the duties of the common schoolmaster. This salutary change is in a great measure due to the government schemes of education. I confidently hope that the day is not distant when the force of public opinion will elevate education into the rank of a recognised science.

Elementary education has two great ends: 1. To develope the intellectual and moral faculties; or, in other words, to develope the faculties of the perfect man: 2. To communicate to the pupil that sort of knowledge which is most likely to be useful to him in the sphere of life which Providence has assigned him.

The science of education must be based upon the nature of the being to be educated; that is to say, upon the laws which govern the development of the intellectual and moral faculties. These laws may be determined as well by observation as by psychological analysis.

Every faculty of our nature has its proper period and peculiar mode of development.

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* In the towns of Newcastle and Gateshead, twenty-five years ago, two schoolmasters had wooden legs, —one had a cork leg, two went upon crutches, two were little better than deformed dwarfs, and not a few were "stickit ministers" and broken down tradesmen.

Now the philosophical educator will always suit his methods of instruction to the age of his pupils, or rather to the state of the intellectual and moral development of the faculties of his pupils; and he will also administer to them that intellectual aliment, both as to kind and degree, which is best calculated to promote the growth of the faculties at their different stages of development. Method, and the principles of method, therefore, necessarily become to him distinct and all-important matters of inquiry.

A good teacher, before laying down any plans for the management of his school, makes himself acquainted with the tempers, habits, capabilities, and attainments of his pupils. He then asks himself the two great questions;—WHAT shall I teach? How shall I teach? He is well aware that these questions cannot be satisfactorily answered without a thorough knowledge of the nature of the beings whom he has to teach, as well as a comprehensive acquaintance with the various methods whereby instruction may be communicated.

All artificial and unnatural methods of instruction, violating the laws of mind, necessarily demand the use of unhealthful stimulants. There is always a want of organisation in schools where the plans and methods of the master are framed without any regard to the constitution of the human mind, or the peculiar tempers, tastes, and capabilities of the pupils: such masters always blame their pupils for the failures of their system, but never seem to be aware that the excellence of a system depends upon its adaptation to the intellectual and moral condition of these pupils. A teacher, who is ignorant of human nature, is like an engineer who sets to work to erect a bridge before he has made himself acquainted with the properties of the material employed in the structure; when his work is completed, he finds, perhaps, that the material is ruptured by the pressure, or by the expansion due to heat; it is true, he might console himself with the reflection that his plan would have been excellent if it had not been for the peculiar properties of the material. A wise engineer would first make himself acquainted with the nature and properties of his material, and then, knowing the difficulties which he would have to encounter, he would provide against them accordingly. In like manner the teacher, who is thoroughly acquainted with the laws regulating the juvenile mind, suits his methods of instruction to the soul which he has to rear, and, fully foreseeing the difficulties which he has to encounter, lays his plans accordingly,—he is quite prepared to supply strength to what may be weak, and to introduce a self-corrective agency to meet any ebullitions of temper or waywardness of disposition.

Our ignorance of mental philosophy has hitherto led us into various erroneous methods and systems of education. The teacher showed an ignorance of the tastes and capabilities of the infant mind, when he overtasked his juvenile pupils with the dull dry detail of technical learning, in the place of communicating to them that kind of knowledge which is best calculated to foster the development of their perceptive and observing faculties.

Teachers, in their ignorance, at one time believed that the first object of primary instruction is to cultivate the verbal memory of their pupils, when, in fact, the verbal memory is one of the few faculties of our nature which need no cultivation. This erroneous opinion led to the adoption of the task system. In accordance with this system, little boys had to commit to memory frightful columns of spelling, long paragraphs of geography, abstract grammatical definitions, declensions of nouns, and conjugations of verbs. The debasing system of rewards and punishments formed a necessary adjunct to this unnatural system of instruction.

In this system the cultivation of the reasoning powers was entirely disregarded, and the aids of philosophical memory, or the faculty of association, were never called in requisition.

The same erroneous opinion of human nature led to the adoption of the rule and rote system of instruction, whereby the pupil had to work out results by formulas and dogmas rather than by the independent and healthful exercise of his own reasoning powers. For example, in the teaching of arithmetic and practical geometry, the pupil was required to work out his problems by a rule appealing to his memory and simple apprehension, rather than by the exercise of his own reasoning powers.

These unnatural methods of instruction have given rise to our debasing systems of discipline. Under a proper system of teaching, children rarely require any other motive to attention than the pleasure which the acquisition of knowledge affords them ; but what natural motive can induce a child to study what is above his capacity, or to commit to memory what he cannot comprehend ? hence the teacher's only resource was to act upon the vanity or upon the fear of his pupils.

The art of education consists in the practice of its principles. It stands in the same relation to the science of education, that any other art does to the scientific principles of that art. A man may be thoroughly acquainted with the principles of any particular art, without being an adept in the practice of it; in order to become this, he must practise the art until he has acquired the requisite amount of tact and skill. At the same time, it must be observed, that the highest amount of skill can only be obtained by a thorough knowledge of the principles of the art, combined with the constant application of these principles. Thus, for example, a man may be thoroughly acquainted with the principles of architectural construction, and yet he may not be able to frame a door, or to build a shed. In like manner a man may be intimately acquainted with all the leading principles of education, and yet, at the same time, he may not be able to give efficient instruction to a class of little boys. It is a lamentable error to suppose, that if a man has knowledge he must necessarily possess the art of communicating that knowledge. In order that a man may become a good teacher, he must not only be thoroughly acquainted with the various branches of elementary education, and intimately acquainted with the great leading scientific principles of education, but he must also acquire that tact and skill in the management of numbers and classes, and that fluency of diction, power of illustration, and facility of availing himself of contingent circumstances, which can only be attained by long practice and patient study.

The art of education, without a due regard to its science, degenerates into empiricism ; and the science, without the practice of the art, becomes little better than a code of barren abstractions without the vital principle of development.

The philosophy of education should go hand in hand with the practice of it;—every step of advance taken by the one, should be followed by a corresponding progress of the other: philosophy should suggest plans and theories, art should test them and try them : philosophy should build up a structure of general principles and rules ; art should supply the facts—the materials — by which, and upon which, this structure should be reared.

Division of the Subject.

The philosophy of education may be divided into five parts : —

1. On method, as applied to education.
2. On the cultivation of the intellectual and moral faculties.
3. On the comparative advantages of different systems and methods of education.
4. On the application of different systems and methods to the various branches of elementary education.
5. On school organisation and discipline.

PART I.

ON METHOD AS APPLIED TO EDUCATION.

CHAPTER I.

METHODS AND SYSTEMS OF INSTRUCTION.—DEFINITION OF TERMS, ETC.

Different Methods and Systems of Education at present employed in Elementary Schools.

BY a METHOD of education is meant the peculiar way in which a subject is taught; and by a SYSTEM is meant those peculiar arrangements, both as to organisation and modes of teaching, whereby instruction generally may be given to the pupils of a school. A system is the development of a method applied to certain objects.

A difference of opinion at present exists relative to the use of the term method as applied to education. According to some writers, method simply means the way in which a subject of instruction may be treated; so that there are only two methods of education, namely, Synthesis and Analysis. Such a restrictive use of the term is not only based on a contracted view of the subject, but it does not give the entire conception usually associated with the term. We use the term in a more comprehensive sense:—A method of teaching comprehends, not merely the way in which the subject-matter is treated, but also the means, artifices, forms of expression, &c., that are employed in conveying instruction to a class of children in a common school.

There are two great methods whereby a subject may be treated, viz., SYNTHESIS and ANALYSIS. By the former method we put the parts of a subject together; by the latter we take the subject-matter to pieces. The method of synthesis is the method of INDUCTION, whereby we ascend step by step from the simple to the complex — from the particular to the general formula; the method of analysis is the method of DEDUCTION, whereby we descend from the abstract principle to the various particular forms which it comprehends. As both methods are employed in the discovery of truth, so both methods may be used in the exposition of truth. The experimentalist may show the composition of water synthetically by holding a tumbler over the flame of a candle (or a flame of hydrogen gas), at the same time calling attention to the moisture that is formed on the interior surface of the glass; or, more exactly, by detonating, by means of the electric spark, the proper mixture of hydrogen and oxygen; in these experiments water is formed by the combination of its elements: — he may also show the composition of water analytically by means of the galvanic battery; in this case the poles of the battery analyse or decompose the water, that is, reduce it to its simple elements, the hydrogen being attracted by the one pole, and the oxygen by the other. We teach arithmetic deductively, or analytically, when we lay down a general rule and require our pupils to work out the particular example by that rule, for in this case we proceed from the general formula to the particular example — from the abstract principle to its special application. On the contrary, we teach arithmetic inductively, or synthetically, when we proceed at once to work out, step by step, the particular example from certain simple, known elementary principles, without taking any abstract rule for granted: in this case the pupils are led to prove the rule for themselves.

The method of synthesis is CONSTRUCTIVE; by this method the skilful teacher builds up thought upon thought — truth upon truth — until his pupils have, almost insensibly, acquired a vast accumulation of knowledge. I have called the method of synthesis a CONSTRUCTIVE METHOD, because it is analogous to the way in which mechanical contrivances are completed: thus, the ingenious builder lays stone upon stone, beam upon beam, until he has reared a vast and beautiful structure, exciting, it may be, the wonder and admiration of the world: in this way, too, surprising results may be attained in education.

Synthesis may be called a SUGGESTIVE METHOD of instruction; because it is progressive, proceeding, step by step, from the known to the unknown, — from the simple to the complex.

By far the larger number of the great physical laws of nature were discovered by induction, and even many of our leading mathematical theorems and principles were established by the same process. Now if it be true (and we have reason to believe that it is true), that the method of exposition should correspond to the method of discovery, it follows that the method of induction or synthesis, is, for the most part, the more eligible for primary instruction. At the same time, it must be observed, that there are certain subjects of knowledge which may be efficiently taught by the method of analysis. But this subject will hereafter receive a more adequate consideration.

The methods of synthesis and analysis may be either DEMONSTRATIVE or DOGMATIC. When the teacher uses the former method of communicating knowledge, he addresses the observing and reasoning faculties of his pupils, who believe in what is communicated to them because they see it to be true, or because they can prove it to be true. On the contrary, when he uses the latter method, he appeals to the memory and faith of his pupils, who, in this case, believe in what is communicated to them simply on the testimony of their teacher — they believe because their teacher says so.

Demonstrative teaching embraces all those plans and artifices whereby a knowledge of principles may be more or less completely communicated to the pupils: on the other hand, dogmatic teaching gives rules and formula in the place of principles and investigations.

Besides these general methods of teaching, there are certain modes or artifices which have regard to the peculiar form or way in which the knowledge is communicated. The INTERROGATIVE METHOD teaches by question and answer ; it may be used simply for reproducing the knowledge which has been already communicated to the pupil, or it may be used in connection with the principle of suggestion ; and then it assumes the form of an important instrument of intellectual culture, which may be called the SUGGESTIVE METHOD OF INTERROGATION.

The ELLIPTICAL form of instruction requires the pupils to fill up certain blanks or ellipses, which the teacher intentionally leaves in his discourse. This form of instruction is only a slight modification of the suggestive method already mentioned. In both methods the teacher and his pupils carry on a sort of *tête à tête* lecture.

In the SIMULTANEOUS form of instruction, the pupils are supposed to give simultaneous responses to the teacher's questions or suggestions. This simple artifice has been sometimes confounded with the collective system of instruction, with which it is necessarily associated.

The ILLUSTRATIVE METHOD consists in conveying a knowledge of abstruse things, or even ordinary things, by means of illustrations addressed to the senses or to the imagination of the learner.

The LECTURING METHOD consists in giving the lesson in the form of a continuous lecture, all questions on the subject of the lesson being deferred until it is finished.

A combination of any of these methods may be called a MIXED METHOD of instruction.

The method generally employed by good elementary teachers, as shall be hereafter shown, is generally a combination of the demonstrative and the synthetic, while that which is usually adopted by sluggish and careless masters is a combination of the dogmatic and the analytic.

There are two leading systems of teaching at present in use which have regard to number or organisation ; the one may be called the COLLECTIVE SYSTEM of teaching, which consists in the teaching of a considerable number at one time ; the other the INDIVIDUAL SYSTEM of teaching, which consists in the teaching of one pupil at a time.

The PUPIL TEACHER system, which has been recently introduced into this country, may be regarded as forming an essential part of the collective system of teaching as it is at present practised in our elementary schools. The pupil teachers are supposed to follow the same plan of teaching as their master, and under his supervision. The MONITORIAL SYSTEM of Lancaster and Bell contains the essential features of the system of pupil teachers; but with this important difference, that whilst the MONITOR is merely a boy selected by the master from the pupils in his school, the PUPIL TEACHER is a paid official recognised by her Majesty's Inspectors, and who is time after time examined by them, and receives regular instruction from the master in all the duties of school keeping, with the view of fitting him for the discharge of his immediate duties, and also with the view of preparing him for the profession of schoolmaster.

The SYSTEM OF HOME INSTRUCTION consists in assigning to the pupils certain lessons or exercises to be studied or completed at home. This system may be combined with either of the two leading systems just described.

The TRIPARTITE SYSTEM, first proposed by Professor Moseley, has received its name from the architectural arrangements of the school. In this system the schoolroom is divided into three apartments, in one of which the master is supposed to teach all the classes in rotation. The leading object of this plan is to bring all the children in the school under the direct instruction of the master, and to counteract undue noise.

A combination of any of these systems may be called a MIXED SYSTEM of instruction.

The word METHOD signifies a way of transit, or the way of passing from one thing to another. According to the philosophical acceptation of the term it comprehends the idea of unity, associated with progression, or a succession of uniform sequences. To arrive at this idea, we must exercise the faculties of abstraction, by which we view many things as one; by which we contemplate not facts only, but likewise the relations of facts: by which we recognise the law which connects these relations.

The comparative advantages and defects of the different methods and systems of teaching will be hereafter more fully considered.

CHAP. II.

IMPORTANCE OF METHOD.—HISTORY OF METHOD.—PRESENT CONDITION AND FUTURE PROGRESS OF EDUCATION.—PHILOSOPHY OF METHOD.

Importance of Method.

There is method in Education. It is a dangerous error to suppose that any man may teach if he has only the requisite amount of attainments. Can it be possible that the art of training and developing the various faculties, emotions, and principles of an immortal and accountable soul is the only art which we have by intuition? Is the destiny of the noblest creation of God, the immaterial, the thinking, the undying principle, fashioned after His own image, to be intrusted to the care of him who has never studied the vast and complex relations of the task which he undertakes, and who, in the impious pride of self-sufficiency, despises the accumulated experience of those who have spent their lives in the work of teaching, and have borne unmistakeable testimony to the difficulties which have beset them at every step in the discharge of their sacred duties?

There is method in Art: the builder and the machinist, the manufacturer, the sculptor, the painter, all complete their constructions and fabrications on the principles and methods which embody the results of vast experience, and which have been their constant study for the whole period of their lives. There is method in Science: there was a want of method when the philosophers of antiquity affirmed, that air and water were elementary bodies, that the celestial bodies moved in circles, of which the earth occupied the centre, and that water rose in the barrel of the common pump from nature's horror of a vacuum; and even in more recent times, the same want of method was shown when Descartes affirmed that the planetary bodies floated in a whirlpool of ether.

Who can estimate the marvellous change that has been effected by the philosophy of method first proposed by Bacon? Nature, as if at the touch of the enchanter's wand, yielded up her treasures of knowledge; physical science, after the death-like slumber of ages, sprung into vigorous existence; and even in our own time, under the guidance of this method, mind has achieved the most despotic dominion over matter; new sciences have been born, far surpassing in utility, beauty, and grandeur all that had been accumulated throughout the past history of humanity.

Poetry has its method. So remarkable is this method, that a great poet will by a single word — an idea — open to us a whole series of relations and conditions. In speaking of the style of Shakespeare, Coleridge observes:—"Who, like him, could so methodically suit the very flow and tone of discourse to characters lying so widely apart, in rank and habits and peculiarities, as Holofernes and Queen Katherine, Falstaff and Lear? When we compare the pure English style of Shakespeare with that of the very best writers of his day, we stand astonished at the *method* by which he was directed in the choice of those words and idioms, which are as fresh now as in their first bloom; nay, which are at the present moment at once more energetic, more expressive, more natural, and more elegant than those of the happiest and most admired living speakers or writers."

There is method in Oratory. Who has not felt the power of Oratory? Whence does this power proceed? An eloquent public speaker must always possess method; he may be without technical learning, and even without those refinements of manner and diction which usually constitute a gentleman; he may be without the *prestige* of rank, or wealth, or party, and even without those conventional literary or scientific titles which are too often accepted as the badges of superior intellect, or as the passports to distinction and power; yet there is something in him which rises superior to all these disadvantages,—there is method, based upon a knowledge of the tastes and ruling passions of his audience, which charms and captivates them by its beauty, convinces them by its exactness and transparency, amd overawes them by its depth and power. Beginning with a simple detail of facts, he generalises, abstracts, and draws conclusions; with a constant regard to the final impression which he wishes to produce, he sees from the first what will be the effect of each successive step; all nature is tasked to supply him with illustrations and analogies,—youthful Spring with his freshness and his song, or golden Autumn with her stores of fruit and her sheaves of corn,—lovely Summer with her flowers and her sunlight, or stern Winter with his storms and his shadows,—the air, the earth, the ocean, the dread magnificence of heaven,—all may be invoked to lend power and enchantment to his discourse; from the world about him he rises to the world of thought—from the visible to the invisible—and there finds new materials for argument and persuasion; having connected argument with argument, and added illustration to illustration, he sums up the accumulated evidence, in order that it may fall with the greatest effect upon the minds of his audience, and that they may be convinced of the truth of the leading conception, the end and aim of his discourse. In all this there is unity with variety, but it is the variety which arises out of unity,—this all-pervading idea constitutes the method. The intellectual faculties which characterise the oratory are very nearly allied to those which are requisite for forming the distinguished teacher.

Everything in nature has its peculiar method of development; and this development may, in almost every case, be aided and improved by the judicious application of the principles of this method. A grain of corn when thrown into the soil will germinate and grow, and bud, and ripen into seed, without the special care of man; but all these processes would be very much aided and improved by the application of the methods which agricultural chemistry has discovered. Just so it is with the germ of intelligence — the immaterial principle. It seeks to develop itself — it germinates, grows, and blossoms, and ripens and expands into developed intelligence, without the application of any artificial means; but the intelligence thus developed without the aid of culture, is that of the savage, not that of the perfect man, capable of acting and thinking in accordance with reason, and in conformity with the law of his Creator.

It is true, that many men are born with a predilection for teaching, and seem to qualify themselves for the discharge of its duties with comparatively little study or reflection. Such teachers are exceptions to the rule; and there can be little doubt, that even they would have been vastly benefited by a study of method as applied to teaching. It is said that Pascal was born a Geometer, but it is very questionable whether we should ever have heard his name, had his genius not been cultivated and developed by a systematic course of instruction. So it is with education: the most distinguished teachers are to be found amongst those who have shown a predilection for the work, and whose minds have been at the same time constantly directed to a study of methods of education.

Before a man can become a distinguished teacher he must have method: all that he has seen, or experienced, or read, relative to the nature of the being to be educated, must have assumed the form of a substantial unity — an idea — an all-pervading law, which connects relations apparently the most dissimilar, and gives oneness and harmony to the most heterogeneous mass of facts and conditions,— which constitutes his exponent of the past, aad the symbol of that calculus which is to enable him to solve every problem which may arise in the future,— which *involves* all his past experience, and out of which he must *evolve* his conduct in the future,—which sheds a light over the path that lies behind him, and becomes the polar star to guide him in his voyage on the dark and shoreless ocean that lies before him. No language can adequately transmit that idea—that method— to other minds; for it is in him merely the key-note with which is associated a long train of harmonious combinations and sequences: it exists *in* him alone, and *for* him alone, and before others can stand on the same vantage ground with him, they must give the same patient attention to the philosophy of method, and submit themselves to the same strict process of self-examination and self-development.

We repeat that no man ever yet became a great teacher until method had become to him a living and substantial reality. This method may, and no doubt does, assume forms suited to the intellectual and moral qualities of each individual, even accommodating itself to the idiosyncrasy of each, and the varying external conditions and circumstances of each; but the grand features of this method, like the elements of our physical and moral constitution, will be the same in all.

A Glance at the History of Method.

Socrates was not a great geometer, but he gave a method of philosophy which determined the character of the schools of antiquity; and the catechetical form in which he gave his instruction has been distinguished by his name. Euclid probably never discovered a single proposition of geometry; but he gave us the idea and form of a synthetic method which has shed an effulgence of light on the path of philosophy, and which will endure as long as there is a human soul to think, a science to be cultivated, or a law of nature to be discovered. Bacon made no discovery in mathematics, nor did he add one fact to our stock of physical knowledge; but he effected a greater purpose—he gave us the method of universal philosophy: what the one did for a single department of abstract science, the other achieved for universal knowledge.

Newton was a great discoverer in every department of mathematical and physical science; but he also gave us, in his "Principia," the embodiment of a synthetic method of teaching mixed mathematics which will probably coexist with the law of gravitation itself. Archimedes was also a great discoverer, but, in a certain sense, his genius died with him; he did nothing to perpetuate himself, for he had no recognised method, and bequeathed to posterity no creative principle beyond the isolated facts and propositions which he discovered; his mind was essentially individual, and his contempt for concrete science, which his mind was eminently qualified to adorn, caused the secret of his power to die with him.

But let us consider the history of method more strictly in relation to primary education.

The ancient classical nations did nothing for primary education; they established splendid schools of philosophy for their young men, but left the instruction of their children to slaves, or neglected it altogether; and during the middle ages—the epoch of chivalry—the only schoolroom was the cell of the monk or the cave of the anchorite. And what was the state of education after the Reformation? From the undue reverence with which the works of antiquity were regarded, education began with the classics, and for the most part ended with them. Poetry was clothed in the garment of heathen mythology, and even our philosophy was more engaged with the history of what was false than with the investigation of what was true. Education became a series of tasks—the memory was enthroned over all the other powers of the mind—reason, invention, and the principle of self-development were disregarded; and under this unnatural and unphilosophical system, a *great memory* and a *great mind* became almost synonymous terms. This method was analytic and dogmatic, for its main element consisted in giving a knowledge of rules and words rather than things—of names rather than positive ideas. Although the leading principles of primary education are contained in the great work of the father of inductive philosophy, yet it would appear that their importance was neither felt nor acknowledged by his immediate followers.

Such was the state of education throughout Europe when Locke began to write. This distinguished philosopher considered that the chief business of primary education is to develop the faculties of the child; that, as the first ideas of children are derived from sensation, so the perceptive faculties should be the first cultivated or developed; and that verbal memory is almost the only intellectual power which does not admit of being improved by education. Locke's method of education was a corollary to his metaphysical philosophy. It was synthetic and demonstrative—its main element being the development of the intellectual powers and moral feelings through the instrumentality of things or subjects which might be known and understood by the child. The method of Locke soon became recognised throughout Europe and America. The author of "Emile," in France, became its most enlightened and most eloquent expositor: and Pestalozzi, in Germany, carried it into practice, followed it out in all its details, and gave the spiritual essence a substantial form — "a local habitation and a name." But in the fatherland of the great metaphysician, his method remained for more than a century a dead letter,—and even till very recently, the methods which he exposed and denounced held an undisputed dominion in the education of the people in this country. But we have accepted from the hands of the pupil what we would not receive from the hand of the master; and we have unwittingly become the followers of Pestalozzi, when we might have been the disciples of our own immortal Locke. But why speak of the country of Locke? Great men have no country— they belong to humanity.

To descend to more matter-of-fact, but not less instructive forms of method: Joseph Lancaster and Dr. Bell contributed to the development of method as applied to primary education, when they established the monitorial system. No doubt it had long been observed, that the older boys might, under certain circumstances, be advantageously employed to teach the younger ones; but the idea of organising such a plan, so as to make it applicable to our common national schools, belongs to these men. The errors and defects of this system are apparent: — its efficiency is subsidiary to, and dependent upon, more comprehensive views of method; it ignores the education of the master as well as that of the monitors; and necessity rather than choice leads to the adoption of these monitors, whose temporary functions, imposed upon them by their master, are relinquished at a time when their skill is beginning to be useful. Whatever may have been the defects of this system, it contained an idea which obviously suggested the adoption of the apprenticeship system, or the system of pupil teachers. The monitorial system was a measure of economy, adopted to mitigate an existing evil—to give the best education to the greatest number of children at the least possible cost. At best it could be regarded only as preliminary to some more complete system. Now, while the apprenticeship system embodies this principle of economy, it recognises at the same time an important principle in the philosophy of method, viz. that the art of teaching, like other arts, can only be acquired by practice and an early attention to the most approved forms of communicating our ideas to others. In order that a man may become a joiner, or any other kind of mechanic, he is apprenticed, at an early age, to a man who is master of that particular art; so, in order that a man may become a teacher, he should be apprenticed, at an early age, to a schoolmaster who is thoroughly master of his work. This apprenticeship system, taken in connection with the system of inspection, and the establishment of training colleges for schoolmasters, must be regarded as the greatest measure which has ever been proposed for the education of a people. In these schemes we observe the recognition of the importance of method. Universities may make scholars, divines, and philosophers; but they cannot train schoolmasters. It is the peculiar province of the professors of our training colleges to effect this, by expounding the principles of education in relation to methods of teaching,—by showing the application of these methods in the actual management of a school,— and by communicating that kind of knowledge which is best calculated to render the teacher useful in his profession. When the Committee of Council on Education published their Minutes of 1846, they virtually announced to the world that there was METHOD IN EDUCATION, and that no man could become a truly useful teacher without a knowledge of that method. Acts of Parliament, or legislative engines, cannot of themselves make men virtuous and religious ; but it is legitimately within the range of their power to decree that Ignorance, which is the most fruitful source of vice and irreligion, shall exist no longer.

This government system of education is not in all respects what the practical educator could wish ; but we may hope that experience, aided by a careful induction of facts, will in time correct what is wrong and improve what is defective.

Jean Paul Richter asks — "What have the political vowels of Europe — the English — done for education?" We answer, almost everything ! Our great metaphysicians first gave the true philosophy of method ; we first adopted the monitorial and infant-school systems ; and although we have been slow to combine and improve all that we had discovered, we have at length organised a system of national education which bids fair to become the most efficient that has ever been proposed.

PRESENT CONDITION AND FUTURE PROGRESS OF EDUCATION.

In taking a view of the state of education in this country, we have much to congratulate ourselves upon. We have been silently progressing ; methods of education have been improving step by step ; but, at the same time, we must confess that we have not yet arrived at the *ne plus ultra*. Still much lies before us to be effected. Many educational prejudices want to be swept away, and many new principles require to be introduced.

Notwithstanding, we ought to feel gratified, and to congratulate ourselves upon what has been done, as it gives us the hope that something more will yet be done. We live in an age of progress: no branch of human knowledge but is advancing—ay, with an accelerated motion. In our own times new sciences have been created, and new departments of art have been brought to bear on all conditions of society. The mighty power of steam has been developed in our own time. Everything around us has been advancing; and education should advance with the advancement of society.

Educators may be divided into two classes. There is the conservative educator, and there is the educational reformer. The conservative educator, like the conservative politician, would wish everything to remain as it is and as it has been. The education of fifty years past ought to be the education of the present period. Things have gone on well enough in the past, and why should they not do the same in the future? Such is the view of these educational conservatives. They may yield a little to the pressure of public opinion; but still the principle remains unchanged in their hearts. They may admit, when they are compelled to express themselves, that the education of the people will not tend to the subversion of government, and in such things as that they will go along with you; but still in their hearts they are conservative in relation to the advancement of education. The other class, the educational reformers, advocate utility and progress. They would not only have us improve our educational methods, but they would have more of the principle of utility introduced into our schools. They would not have the boys in our national schools taught things that are merely curious, or things merely to gratify the prejudices of particular individuals; but they would have them taught those things that will bear upon the future pursuits of life. We have not yet attained to that. We still, in many of our schools, go on with the old routine—reading, writing, arithmetic, with the addition, *ad libitum*, of catechisms and formularies. Day after day the same dull routine goes on. Oh! how the monotony of the dull routine deadens the faculties of the children, and not only of the children, but of the educator! It is a well-known fact, from the statistics of insanity, that in those countries where the pursuits of men are most monotonous, there we find the greatest prevalence of insanity. It appears, therefore, that it is the monotony of the pursuits that produces the insanity; and we cannot wonder that the intellectual faculties of such schoolmasters should retrograde, instead of advance, nor can we wonder that the children, constituted as they are by their good and great Creator with faculties which lead them to seek after a knowledge of the properties and uses of the various objects in the world around them, should be uninterested in the dull routine in which they are engaged.

The Baconian Philosophy considered in relation to the Progress of Modern Education. Utility and Progress should characterise all our Methods and Systems of Education.

Bacon was one of the most enlightened educators that ever appeared on the earth,—for his philosophy was as fully applicable to the advancement of education as to the development of the experimental sciences.

The spirit of the Baconian philosophy may be characterised by two words,—UTILITY and PROGRESS. The ancient philosophy was stationary, because it disdained to be useful:—It propounded imposing abstract theories which had little or no bearing upon the actual condition of man in society:—It took its aim at the stars, and therefore hit nothing:—It speculated about virtue and happiness, but added nothing to the comforts or enjoyments of human existence:—It professed to reform and enlighten the world, but left it as dark and degraded as it ever had been:—It was a sort of intellectual gymnasium, in which the faculties were exercised; but this intellectual action yielded no work—no fruit—as regards the progress of society; the mind revolved in a circle of speculative theories,—the starting point of to-day became the goal of to-morrow,—there was motion, but no progress. The command given by this philosophy was "Mark time!" and thus for two thousand years, the human intellect continued to mark time. The father of the inductive philosophy gave the command, "Advance!" and society, obedient to this command, has multiplied a thousandfold its resources of enjoyment and happiness. This philosophy was practical,—it attempted nothing which could not be accomplished,—it aimed at a plain tangible mark, and hit it. It sought to improve the sciences by advancing the arts. It took the common sense method of induction, which had from time immemorial been successfully followed by the artisan, as the great instrument for advancing philosophy. Its object was UTILITY, and its end PROGRESS.

It is not generally known or generally acknowledged that Bacon's philosophy, as an inductive philosophy, was really derived from the workshop. The inductive principle had been practised for ages by the workman in his various processes of art. This was thought unworthy of attention by the philosopher of the platonic schools; but Bacon saw that under this inductive principle the arts had advanced, while the sciences, then so called, had remained stationary; and his own strong common sense showed him that the principle which advanced the arts might also advance universal science.

Let us inquire, How does this philosophy apply to modern education.

According to the Baconian philosophy, utility and progress should characterise all our methods of education. To secure progress, we should aim at what is practicable and useful. Until within the last twenty years, the platonic philosophy infested all our systems of education. The inductive philosophy, which created new sciences, and infused fresh vitality into the old ones, left our educational systems as it found them,—all but worthless as regards the education of the people of a great commercial, scientific, manufacturing, and engineering nation. In our middle and higher class schools, the languages of the ancients, the logic of the ancients, and the geometry of the ancients, formed the great subjects of school instruction; whilst practical science, general knowledge, and nearly all those subjects which bear directly upon the interests of man as an active and a thinking agent, were virtually ignored. This system even failed to accomplish the contracted end which it had in view. It professed to exercise and strengthen the intellectual faculties; but the only faculty which it could strengthen, admitting that to be possible, was memory. To remember, recite, and admire what the ancients had done, was the highest end which it proposed. It therefore produced a race of slavish imitators, and not a race of original, vigorous, and practical thinkers. Facts, and the induction of facts, were deemed unworthy of their platonic philosophy.

Now Bacon had taught, in his philosophy, that the powers of memory can do little towards the advancement of science. He ranks the achievements of memory with the exhibitions of the mountebank: "The two performances are of much the same sort. The one is an abuse of the powers of the body; the other is an abuse of the powers of the mind. Both may excite our wonder; but neither is entitled to our respect." Locke, the great metaphysician, also advocated the same view at a subsequent period.

Even geometry was considered to suffer a degradation whenever its abstract demonstrations were combined with more simple modes of exposition, or whenever it was applied to the business of life,—its essential and eternal truths were vitiated by the association. This opinion obtains very largely amongst a certain class of educators, even at the present day. "Take care; do not simplify your geometry; do not attempt to give your children any common sense definitions of geometrical truths, otherwise you will vitiate the eternal, immutable truths of geometry. You must begin with Euclid, and you must end with Euclid." Men that speak loudly in praise of Bacon as the father of modern philosophy, will never tell you about this,—that he exposed the systems of education which they are now employing in the education of the people of this country.

Now Bacon taught, that geometry, as well as all the other branches of mathematics, was valuable as a branch of education only so far as it contributed to supply the wants of society; and that such practical applications, so far from detracting from the discipline which it gave the mind, in reality made that discipline more forcible and complete. He viewed mathematics as an instrument for the extension of art and science, and considered that it should be studied not as an *end*, but as a *means* to an *end*, without which the study would be, in a great measure, fruitless.

In short, like the platonic philosophy, the aim of the education of these schools was to raise man above the influence of vulgar wants.

The principle of utility and progress would lead us to conclude that the education of the boy should fit and prepare him for discharging the duties of the man. But what did the collegiate-trained aristocratic teacher care for the duties and interests of the carpenter, the wheelwright, the engine builder, or the scientific experimentalist? Their pursuits were altogether foreign to his education and association; of their habits of thought he knew nothing, and cared as little; between him and them there was an impassable gulf; he lived in a quiescent world of abstractions; they lived in a world of action and progress. How could the one become the educator of the other?

These remarks, made in reference to the middle and higher class schools, will apply, with only a slight modification, to the primary schools of the corresponding period.

Interest quickens man's perceptions and invigorates his intellectual powers. The artisan works out his results chiefly by inductive processes of reasoning, because he finds the highest degree of certainty, and a sufficient degree of exactness in the method, and performs his inductions well and carefully, for his interest depends upon his deductions. Hence it was, that whilst philosophy remainded stationary, the arts went on progressing. Bacon observed this, and therefore recommended the inductive process for the advancement of philosophy. What the artisans had performed successfully on a limited scale, he proposed to employ in the advancement of universal science. Thus Bacon's philosophy was *borrowed from the workshop;* and what he did for science, we may now do for education; we must *borrow from the workshop* by adopting in our schools, more or less, those processes of reasoning, habits of thought, and peculiar modes of self-instruction, employed by our practical men.

If the great intellect of Bacon could condescend to borrow from the workshop, why should we be ashamed of borrowing from the same source? But yet so it is. Talk to some of our professional men—it may be our lawyers, or our clergymen—about borrowing ideas, and taking hints from the working man, they would smile at you with contempt, and say, "Can men who have had a college education obtain any information from persons of the lowly class, whose education has been altogether neglected?" Ay, neglected, to be sure; neglected so far as the schools in which these men had been placed in their childhood are considered; but those workmen, when they left the schools, had to commence a course of self-education; and that self-education has had its results; that self-education makes the English workman what he is,—the pride of his country, the most skilful artisan of the world.

Notwithstanding all that has been done for primary education within the last twenty years, we are still very far from having realised the Baconian condition of utility and progress.

We are still under the dominion of abstract theories of education consecrated by great names, and sanctioned and patronised by great societies. That philosophy is false, and not less hateful than it is false, which arrests the progress of knowledge by extinguishing the spirit of inquiry and destroying freedom of thought and action. The platonic philosophy enslaved the human mind for two thousand years, and during that long period it produced no fruit, because it superseded inductive processes of inquiry by laying down theoretic dogmas and sublime philosophic fictions. Bacon emancipated the human mind from this degrading and enfeebling slavery. He showed mankind that the inductive method would lead them to new truths, far exceeding in brilliancy and utility anything which the ancient gods of philosophy, whom the people had blindly worshipped, had ever discovered. It is not necessary to say how wonderfully this prediction has been fulfilled. Thus our platonic theories of education must one day fall before the inductive method of inquiry.

In moral questions, there is, perhaps, no such thing as absolute certainty. A question in education cannot be solved in the same manner as a problem in geometry. Moral evidence has little in common with mathematical evidence; and the inductive method of research is in many respects widely different from the analytic method, by which we demonstrate abstract truths. In the inductive sciences, such as education, we seem only to approximate to truth. We can hardly ever say that we have actually arrived at the absolute truth; but we approach nearer and nearer to it, according as we extend our inductive processes. The truth lies in the asymptote of a curve, towards which we are always approaching, but which we may never absolutely reach. At the same time our approximations have always the stamp of utility, for they are practically true; that is, they are true as far as the actual wants of society are concerned. The inductive method never puts a stop to further inquiry; it is itself progressive, and recognises the principle of progress. It gives no divine revelation; on the contrary, it appeals to reason, and challenges further inquiry. Watt concluded, from his experiments, that the sum of the latent and sensible heat of steam was a constant quantity: this, although not found by subsequent experimentalists to be strictly true, was nevertheless a grand approximation to truth, which conducted him to those magnificent inventions which have changed the destinies of the world. The same spirit should be adopted in relation to the development of our methods of education.

The inductive method has already done something for the progress of education, but its importance is not yet sufficiently acknowledged or understood. We are still the slaves of conventional forms and prescriptive theories; we are still too much overawed and cowed into servility by high-sounding names, and by the dogmas of self-serving professions and ambitious societies. The progress which we have made should be taken as the guarantee of further advancement. The positions we have gained must form the base of operations for still greater achievements.

When I was a boy, geography was taught by rote; now it is taught much more efficiently by means of maps. Arithmetic was imperfectly taught by rules; now it is admirably taught by an exposition of principles; but there are still many important branches of knowledge very imperfectly taught by the rule and rote system. We must not abandon the hope of future *progress*. With respect to *utility*, there is much which remains to be accomplished. We want a greater enlargement of the basis of intellectual and moral development, suited to the advanced state of our arts and sciences. The rich stores of scientific knowledge, which we now possess, should be more thoroughly and systematically taught in our schools, not only as means of intellectual and moral culture, but also on account of their immediate bearing on the business of life.

Let us enter an elementary school in one of our manufacturing cities. The master still teaches on the old individual system. There is no black board, or any kind of experimental apparatus. There are maps, it is true, hanging on the walls, but they seem to have been little used, for they are covered with dust. The school is not noisy, but there is the constant chatter and titter of idleness and frolic. There is discipline of a certain kind, but it is not moral discipline. The boys are sons of mechanics and factory labourers, and, like their parents, they will have to enter the workshop or the factory. They are sharp, intelligent-looking boys, and seem capable of learning anything which the schoolmaster might attempt to teach them, or of taking advantage of his occasional fits of listlessness and abstraction ; but they are idle, and feel no interest in their tasks. The dull routine of reading, writing, and arithmetic, with catechisms and formularies, goes on day after day. The school is characterised neither by utility nor by progress. The master sits at his desk, apparently in a deep "brown study :" let us look over his shoulder and see what he is doing. He is studying the ancient geometry, and on one side of his desk are some books of the ancient classical authors. He is a scholar and a mathematician. What a misdirection of intellect ! What fruit has his knowledge yielded him ? or what advantage has it been to the pupils of his school ? It has been a negation ; or rather, it has been worse than a negation. These boys want to be taught in matters relating to the employments which they will soon have to follow. The master is idle, as a teacher, because the boys will not attend to his abstract prelections ; and the boys are idle because the master will not instruct them in those things which form the subjects of their every-day associations. The school-house is surrounded by engines, by factories, by chemical works, and by workshops of all sorts. What a mine of intellectual wealth lies at his very door available for school instruction ! How useful he might become ! He might fill these hives of industry with a far more intelligent and skilful class of operatives, and thereby not only advance the interests of the operatives themselves, but contribute to the productive resources of his country. Hark ! the steam whistle ! He starts as a man aroused from his slumber. Does that sound awaken some useful trains of association ? The steam-engine, with its huge train of cars, passengers, and merchandise, starts on its winged course. It goes onward and onward, and woe betide the thing that obstructs its progress. It rolls from hamlet to hamlet, and from city to city, carrying with it the products of industry and intelligence. Type of the age of progress! has the shrill blast of thy whistle reminded the schoolmaster that utility and progress are realities demanding his consideration, and claiming the tribute of his powers? Poor dreamer! have you really returned to your problems? Are you content to remain stationary, whilst everything around you reminds you that utility and progress are the motive principles of the age; and that beings such as you, with all your classical lore, must be swept away as the surf of the ocean before the advancing tide of civilisation?

PHILOSOPHY OF METHOD.

Having arrived at an educational epoch in which the importance of teaching, as well as of the method of teaching, is duly recognised, it becomes a matter of inquiry, How are we to distinguish the true from the false? Amid such an accumulation of facts, methods, and systems, what are the evils arising out of the abuse of method, and by what principles of philosophy are our systems to be tested and improved? In short, what are the laws which govern the philosophy of method?

Education, like all other sciences, must be based upon a careful induction of facts. All true ideas of method must be derived from a careful study of the nature of the human faculties, as regards the mode as well as the order of their development. It is, therefore, the first business of the science of method to discover the laws and conditions which regulate the development of the mind,—to follow Nature wheresoever she may lead us, and not to lay down preconceived rules for her guidance. Our attempts to teach by abstract notions, formed independently of a careful study of facts, are as ridiculous as the conduct of the savage who sowed gunpowder instead of trying to make it. It is true, that in the progress of all science there must be an initiative idea, but then this idea must be tested and perfected by an appeal to experience and experiment. When the ancient astronomers affirmed that the orbits of the planets were circular, because the circle was the most perfect figure, they committed a great error in philosophy, for the true proof of their initiative conception should have been sought for in nature, and not in any abstract principle. So, in like manner, all our theories, or general principles of teaching should be tested by an appeal to facts of observation and experiment. The relative efficiency of different systems should be determined, by placing them under the same circumstances and relations, and then, by a careful induction of facts, we should establish some general principles of method. The certainty of our conclusions, in such cases, depends upon two circumstances;—first, on the facilities which we have for tracing effects to their causes, and conversely for following causes to their legitimate effects,—second, on the faith which we have in the constancy and uniformity with which the same relations and conditions occur. Thus, for example, the phenomena of the material world are always open to observation and experiment; and, at the same time, the perfect uniformity with which they take place leads us to speak with confidence of the future, from what has taken place in the past. A chemist, after having determined the particular action of one substance upon another, from his instinctive belief in the permanence of the laws of nature, at once decides that the same action will always take place under the same circumstances; but experience alone must lead him to find out what are the essential circumstances and relations for producing the particular action, and what are merely casual or accidental; in short, experience, or repeated experiment, must lead him to discover the true relation of uniform sequence—the relation of cause and effect.

Let us penetrate a little further into the recesses of this subject. Facts are the point of departure of all philosophy; these become matters of consciousness; observation there lays hold of them before committing them to induction, which forces them to yield up the principles which they contain. The method of observation and induction was first given by Bacon, but it has become the spirit of the age,—the spirit of the world of civilisation and development. It constitutes the unity of an age characterised by the most striking diversities and antagonisms. Philosophy has its origin in observation and experience only; to be so limited is to be limited to human nature ; but what else could we have, or would we have? The experimental philosophy of Bacon (characterised by observation, experience, and experiment), is sufficient for the attainment of all knowledge, and for the completion of every science. It has passed sentence on the ancient systems of philosophy,—it has destroyed all that was merely hypothetical, but it has perpetuated all that was based on observation. A single fact not unfrequently consecrates a mass of errors, and sometimes gives to the wildest theories a certain amount of credit among men. Everything true and permanent in the systems of philosophy, scattered throughout the course of time, is the fruit of observation; and everything permanently useful in society is the result of the experimental method. To arrive at a permanent system we must not only observe, but we must observe everything faithfully, truly, and completely, without prejudice and partiality. We must use only the method of observation, but we must apply it to all facts, wherever they exist; on its impartiality depends its accuracy, and to be impartial it must be universal. Method, as applied to education, is a mixed inquiry, comprehending questions of physics as well as metaphysics; and a comprehensive method of observation is necessary to establish the desiderated alliance between the two classes of phenomena, not by the sacrifice of the one to the other, but by the unity of the method employed in ascertaining the law connecting the phenomena, which, though different as to kind, are nevertheless coexistent and inseparable as to results. When observation has put us in possession of all the elements of our science, we then proceed with the work of classification, generalisation, &c.

In order to fulfil these conditions, *the principles of method, as applied to education*, must be considered SUBJECTIVELY, as well as OBJECTIVELY ; that is tó say, in relation to THE ME, as well as in relation to THE NOT ME. The science of THE ME is called Psychology; it gives the history of the soul as derived from consciousness and reflection ; it is, therefore, entirely occupied with internal facts and phenomena. The objective is our intellectual principles considered in relation to their external objects. Here we must observe how the minds of children develop themselves; and also, how the mind of man, regarded historically, or in connection with the progress of society, has developed itself.

All questions relating to methods of instruction are contained in the three following : —

1. What are the characteristics of *the actual,* or the developed intelligence ?

2. What are their *primitive* characteristics?

3. What are the intermediate conditions, or occasions, connecting the actual with the primitive; or, in other words, how is intelligence developed ?

The first two questions are almost exclusively subjective ; the last is objective as well as subjective.

Here we start with the actual state of the faculties, and arrive at their primitive state by following the intermediate links connecting the one with the other. To determine the actual, is the easiest problem, and its solution is the first step towards the solution of the others. This is the experimental method : we first observe and register all the principles or laws which actually govern the action and development of the faculties ; — we admit only those facts and principles which really exist, but of those we reject none; — we ask not why they exist, or for what they exist ; it is enough that they do exist, and what is in nature must form an element of science ; — nor are we in haste to classify the results, in order to bring out some favourite theory ;—we are content to wait patiently until their registration is completed, so that their relations may be rendered apparent, and that their theory may gradually unfold itself.

The philosophy of method, as applied to teaching, is not less difficult than important. The diversity of views which at present obtains in relation to systems of teaching, is a sufficient evidence of the difficulty of the subject, and a sufficient testimony to the want of some recognised principles.

The following are some of the difficulties peculiar to the inquiry:—

1. Although the same powers and affections are found in every human being, yet these powers and affections exist in different degrees and states of development in different individuals. Hence it follows, that a system of instruction which is adapted to one class of pupils may not be suitable to another.

2. Different causes may, and no doubt often do, produce the same or similar effects. This arises from the constitution of the mind itself, for we know that it admits of various modes of development.

3. Teachers differ much in their capabilities and acquirements; and they rarely restrict themselves to the use of any special system of instruction.

However, an earnest study of the principles of method will enable us to surmount these obstacles. In conducting our inquiries, the following summary of rules and principles, having a special bearing on the subject, should be duly considered.

Importance of Definitions.

No science can make a satisfactory progress unless its technical terms are clearly and precisely defined. This is especially true in relation to the science of education. At present we have scarcely any recognised terms in education; we dignify by the name of a system or method some trifling modification of a general principle, and we make use of terms without sufficiently limiting their amount of meaning. Thus we speak of "the elliptical method," as if it contained some peculiar principle which was not involved in "the interrogative system" of instruction; some persons erroneously use the term "simultaneous teaching," to mean the same thing as "collective teaching." As a preliminary step, therefore, to the attainment of exact knowledge in the science of method, we should always define the terms which we employ, before proceeding to the detail of facts, or the elucidation of principles.

Collection of Facts.

The first step, in the attainment of a knowledge of right methods of teaching, is an extensive acquisition of facts. In recording these facts, all the conditions and collateral circumstances should be carefully noted, for even circumstances which appear trifling at the time, may really be important links in the chain of sequences.

Educational facts may be derived from books on mental philosophy, from our own individual experience and observation, as well as from the experience and observation of others. We are not to look to legislators and school managers for the discovery of these facts, nor even should we rely too much upon the hasty impressions of the visitors of schools. It is upon the labours of the practical teacher that we must chiefly depend ; it is his business to watch the development of his pupils' faculties as they expand themselves under the various modes of instruction ;—it is his business to collect facts, to record observations, and to institute experiments.

In forming a collection of facts, the following rules must be observed : —

1. All the facts should be fully ascertained or authenticated; and whilst no essential facts connected with the subject should be wanting, all trivial and incidental circumstances should be omitted.

2. The statement should contain a complete and fair view of all the facts involved in the inquiry, and none of the facts should be in any way modified to pander to any preconceived theory.

Teachers should aid each other in the collection of facts, and Government Inspectors should afford them every facility for the attainment of this object. Some facts transmitted to us may appear to be contrary to our individual experience ; let us beware how we reject them ! Our prejudices may be standing in the way of the advancement of the truth. We should test the facts by some new experiment, or we may find some hitherto neglected series of facts in our own experience which may lead us to a right decision. Hitherto, the facts accumulated by teachers have been almost ignored. An inspector enters a school with a stern determination of observing everything for himself, without calling in the aid of the teacher ; after spending a few hours in that school, he leaves it with the belief that he has collected all the facts of its last year's history. Lamentable error ! that teacher, if worthy of his office, could have given him the history of the growth and development of every boy's mind and character, with a true account of the influences which had been brought to bear upon them. We look to the hearty co-operation of inspectors and teachers for the accumulation of facts. But the inspector must not always appear before the teacher in the stern character of censor and judge; he should also appear as a friend and fellow-worker in the great common cause.

In forming a collection of facts, the following sources of error should be carefully guarded against :—

1. Receiving facts from persons whom we have reason to suspect of having some interested object to serve in disguising or modifying them.

2. Receiving important facts from persons in whose judgment and power of observation we have not the fullest confidence.

3. Receiving partial statements of facts given with the view of supporting some favourite system of education.

4. Receiving opinions as facts. In guarding against this fruitful source of error, it is above all things necessary that we should

Distinguish between Facts and Opinions.

The confounding of facts and opinions should be carefully guarded against; for we are all too apt to mix up our own impressions and favourite theories with the detail of facts, and hence it is often very difficult for us to separate the one from the other. When a teacher states that he has found a certain system of instruction produce the most satisfactory results, he does not restrict himself to a simple statement of facts, for he gives his opinion of the character of the results, whereas he should simply describe what these results were. A teacher gives us an opinion in place of a fact, when he states that he has found the elliptical system of instruction produce such and such results, when a full and simple statement of facts would be, that in the course of teaching on the collective system, he had adopted the form of elliptical response. The master of a school teaches, for the most part, after a particular system, and his pupils make progress ; this progress is ascribed to the particular system : now the progress of the pupils is a fact, and that the master taught by a particular system may also be a fact ; but that this system of instruction was the true cause of the progress is an opinion; for it is giving the relation of cause and effect between two facts ; and it is quite possible, that some hidden or unobserved influence may have solely, or at least mainly, contributed to the progress of the pupils. The omission of a fact in the chain of sequences is often as injurious to the cause of truth, as a misrepresentation of the case. Our statement of facts, therefore, should not only be free from opinions and impressions, but it should at the same time be full and faithful, and not distorted in any way with the view of supporting some preconceived notions or theories.

These are some of the rocks on which our method is often wrecked, — it is necessary that we should signalise them.

Comparison and Classification of Facts. Relation of Cause and Effect.

In order to arrive at general conclusions, our first step is to arrange the facts according to the points in which they agree ; our next step is to strip our groups or collections of facts of all their extraneous circumstances and contingent conditions; that is to say, by a comparison of our different groups of facts, we must separate those conditions which are essential to the result, or desired effect, from those which are accidental and non-essential. Having arrived at a uniform and invariable series of sequences, our next step in the process is to trace the relation of cause and effect. When one event is invariably followed by another event, we speak of the one being the cause, the other the effect. Now to the facts which are so uniformly associated, we have no hesitation in attributing the true relation of cause and effect. Let us take an illustration from Dr. Wells' theory of dew. The facts of this case are these: moisture or dew is always found on the surface of plants in clear cloudless nights, but little or no moisture is found on the plants in cloudy nights; these results take place for all plants, whatever may be their colour, &c., and whatever may be their absolute temperature. Here the incidental or non-essential facts are the colour, absolute temperature, &c., of the plants; the essential facts are, that dew is formed on clear nights, and that no dew is formed on cloudy nights; hence the cloudless sky is an essential condition for the formation of dew.

In education, the tracing of the relation of cause and effect, among a succession of events, is always a matter of difficulty and delicacy, and is often attended with considerable liabilities to error. But the difficulty of the task should not deter us from the undertaking. The following sources of fallacy deserve especial notice: —

1. The cause which we assign may be merely an incidental circumstance, and not essentially connected, as a uniform sequence, with the result.

This fallacy frequently occurs in matters of education, for how often do we find some trifling mode or manner of teaching — such as the class arrangements, &c. — dignified by the name of a system, which is said to work out such and such results!

2. The events, which we regard as cause and effect, may be closely connected, but not in the relation of

cause and effect. The true cause may be hidden or overlooked in our haste or in our fondness for some favourite theory.

For example, it is a common thing to hear the advocates of the individual system of instruction appeal to the fact, that good scholars were formed under that system; while the truth is, the so-called good scholars were made, for the most part, independently of the characteristic features of that system, viz. by home instruction, by the time of training, and by the extensive use of class-books.

It remains yet to be determined what conditions are essential, and what are only accidental, in most of our present systems of education. It is to be hoped, that some distinguished person amongst Her Majesty's Inspectors, who are in possession of a vast number of facts, will confer this boon on society.

General Principles.

Having traced among our groups of facts the relation of uniform sequence, the next step in our process is to bring a number of them together, and to discover in them some common fact, or element, or general principle. This common element, or general principle, becomes a distinct subject of contemplation, and it is taken as characteristic of a whole class. In forming this generalisation two things are especially to be observed: 1st, the principle should be a real fact; 2nd, it should be true for all the cases without exception.

Let us illustrate the two processes of classification and generalisation.

We take a number of bodies differing in their external form and colour; one is an iron ore, another a steel bar, another has the shape of a horse-shoe, but they all agree in attracting iron, and they also agree in having iron in their composition, — we *classify* these bodies, and call them magnets; colour, form, &c., are accidental properties of the class, and composition and the fact of attracting iron are the essential qualities of the class. But we now discover, that if any one of these straight or oblong magnets be freely suspended, one extremity will be always directed towards the north, and the other extremity towards the south; here we discover a common or general principle belonging to the whole class—viz. polarity; this is a process of *generalisation.*

The relations of things form the materials of method; and the general principle connecting these relations constitutes the leading element of method as applied to those particular things.

Having brought together a number of different systems of instruction, which are always attended with a common result, we must endeavour to discover some principle which is common to them all,—this common principle will give us the idea of a general method of instruction, which will be operative amid a certain variety of incidental conditions.

As a general principle is nothing more than a convenient form of expressing a general fact, its legitimate application is limited to the particular cases from which it has been deduced. Hence the error, into which many teachers fall, of pushing certain systems beyond their legitimate sphere of application.

A general principle, according to the strict acceptation in which we have hitherto taken it, is simply a general fact, but it sometimes assumes the form of a THEORY or an HYPOTHESIS. In an hypothesis, a thing or principle is *supposed* to exist; but, like a strict general principle, it should adequately explain all the facts which belong to the subject-matter. General facts simply give the relation of law without making any assumptions; hypotheses express the relation of ascertained facts by the supposed operation of a thing or principle, which may or may not exist; hypotheses, in most cases, only serve the purpose of conveniently grouping together an extensive series of facts and phenomena. Thus for example, that the planetary bodies attract one another with forces which are directly as their masses, and inversely as the squares of their distances, is a general fact; for the force really exists, and really acts by the law which is assigned to it. In Franklin's electrical theory, electricity is supposed to be a subtle fluid which may exist in excess or in deficiency in bodies, thus giving rise to the two kinds of electricity, which, according to this theory, are called positive electricity and negative electricity. The hypothesis, in this case, serves the purpose of connecting together a large number of facts. Now that there are two kinds of electricity, possessing certain distinctive properties, is a general fact, but that these properties belong to a single fluid is a conjecture — an hypothesis—which is more or less useful to us according as it more or less completely explains the observed phenomena.

General facts, as well as theories, are sometimes suggestive, that is to say, they sometimes lead us to suspect the existence of some new fact or principle; in such cases, however, it is the province of observation and experiment to confirm or overthrow the truth of the conjecture.

Educational theories should be looked upon with distrust, and if acted upon at all it should be with extreme caution. They should be regarded in no other light than as convenient modes of connecting a series of facts, or as suggestive of some course of experimental inquiry. For example, a teacher would run into a mischievous error if he were to act upon the phrenological hypothesis, that the faculties and affections of our intellectual and moral nature respectively act through and by particular portions or organs of the brain, and that, other things being the same, the development of any particular faculty or function is in proportion to the magnitude of that particular organ, or region of the brain, through which the faculty or function is supposed to act. To those teachers who seem disposed to put faith in this imperfect theory, we should say:—Why act upon any theory, when you can ascertain, with the greatest precision, the true character and capabilities of your pupils by actual observation?

There are two extreme views, in relation to general methods of instruction, which are equally unphilosophical, and which should be equally avoided. The one is an implicit confidence in method; the other is an utter scepticism as regards the utility of any method whatever.

Evils of Implicit Confidence in Method.

No system of teaching can be efficient unless the master possess all those qualities which the system itself presupposes. If a teacher is wanting in any of those essential qualities, it would probably be better for him to modify the system to suit the circumstances. Moreover the state and condition of the pupils may not correspond to that which the system presupposes. The blind unreasoning attachment of teachers to systems has often brought ridicule upon themselves and discredit upon the systems which they professed to follow. Failures of this kind have, no doubt, often led to the unphilosophical opinion "that each individual ought to have either his own system or no system at all." * The teacher should, in the fullest sense, be the master and not the slave of the system by which he teaches. The modes in which the faculties of children develop themselves are sufficiently various to admit of slight modifications in the systems of instruction, in order to suit the capabilities of the master. We can hardly say of any existing system, that it is the only efficient one; and as more or less imperfection is to be found in every existing system of education, so it is equally true, that more or less truth may be found in all of them. Until masters are thoroughly educated for their work, we must hold that the system should be made for the man, and not the man for the system.

As children love change and novelty, a good teacher will vary his subjects of instruction as well as his methods of instruction accordingly: his judgment must be exercised in selecting those methods which are most suited to the existing conditions of his school.

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No intelligent teacher would ever attempt to carry out to the strict letter any of our existing rules and systems. The following may be taken as a well-established rule in teaching children some of the simplest elements of knowledge: "Begin from the beginning of the subject, and never take a second step till you are sure that the first is perfectly acquired." Now this rule, though true in its spirit and intention, is very far from being strictly true as applied to some subjects. In teaching the alphabet, for example, who would ever think of making a child *perfectly* learn one letter before it is taken to another; or, in teaching arithmetic, of making the child *perfectly* learn the rule of addition before it is taught anything of subtraction?

It will be instructive to consider, more in detail, some of the evils resulting from a slavish attachment to systems.

I. Evils of attaching undue importance to the non-essential features of a system.

II. Evils arising from not giving due attention to the limits of certain modes of instruction.

III. Evils arising from the neglect of auxiliary aids.

IV. No system can be efficient without intelligence and industry on the part of the master, and without he is religiously imbued with a high sense of the dignity and importance of his work.

I. One teacher cannot give Bible lessons without a gallery,—another cannot teach arithmetic without the Pestalozzian boards, — another defers the teaching of drawing until his committee can afford to purchase Messrs. Parker and Co.'s models,—and so on. To such teachers we would say, beware of an undue attachment to the mere mechanical forms of individual systems. Imbue your minds with the spirit of these systems, and, above all, study the philosophy of their method. If you want a plant to grow you water the root, not the leaves and branches; so in like manner, the teacher should go to the root—the fundamental principles of education.

II. Some modes of instruction, very good as regards their legitimate sphere of application, may become useless if not ridiculous, when pushed beyond their proper limits. It is desirable that these limits should be duly ascertained and defined, by a strict induction of facts. On the other hand, a method of instruction should not be despised because it is not of universal application. Because the writing system of Mulhauser, for example, should not be found efficient in making finished writers, is no reason why it should not be one of the most eligible modes for teaching the first elements of form to children. In this case, the business of the philosophical inquirer is to determine the extent to which the system should be carried.

Again, a mode of instruction may be subsidiary to some more general method, with which it is necessarily associated, and to which it may give a higher efficiency. In this case we should determine the relative importance of the subordinate method, and the most favourable conditions for its application. On the other hand, the modes of instruction which are employed together should be in harmony with each other, and also in keeping with the other recognised principles of method.

The methods of instruction adapted to the young, may not always be best calculated for the instruction of adults. In this case we should determine the period at which this change of method should be made. An able teacher, who had been successful in teaching arithmetic to boys by the Pestalozzian boards, attempted to teach adults on the same plan; but he failed, and thereby brought himself and his system into unmerited contempt.

III. The teacher should watchfully guard against any undue confidence, not only in his own teaching powers, but also in the system by which he teaches. He should be ever ready to avail himself of all the means within his reach, for giving increased efficiency to his system. Without, for example, in the least undervaluing his system of collective teaching, he should not overlook the aid which he may occasionally receive from individual instruction; nor should he despise *the use of Text Books,* *especially when associated with home instruction.* The apparent discrepancies in the results of some of our existing systems are doubtless, to a great extent, due to the want of a proper appreciation of certain subsidiary aids to class instruction.

IV. Much remains to be effected by the individual merits of the teacher. Methods of teaching are little better than dead letters in the hands of stupid and indolent pedagogues, but they become living efficient principles in the minds of thinking and active teachers. Systems should be tested by the teacher and modified by him, if found necessary, to suit the various tastes, habits, and future pursuits of the children placed under his care. He must become a moral philosopher, always reflecting and experimenting upon matters of education. The schoolroom is his laboratory and his studio ; the little boys by whom he is surrounded are the subjects of his reflections and experiments, and the great end is their intellectual and moral amelioration. The teacher is a much more elevated being than the mere mechanic. The results of machinery are splendid and overpowering ; but then all that is truly great in these results is due to the creative mind that gave the method,—the law, physical or mathematical, or perhaps both physical and mathematical, by which these results are produced. The machine makers, according to our systems in the division of labour, are little better than machines making machines ; one forges a bolt, another files it, and another puts it in its place ; one casts a wheel, another turns it on the lathe, and another superintends the machine that cuts teeth upon its rim ; thus each man toils from morning till night, and the labour of one day is the type of the labour of that which succeeds. It is not so with the teacher : creative minds cannot so cut out and divide the labour of instruction, or so lay out the principles and methods of teaching, as to supersede the exercise of his reasoning and reflective powers. His work is professional,—it is akin to the medical man's. The teacher is no machine,—his mind is above all rules and superior to all authority in relation to his work.

Boards of education and visiting committees should not interfere too much with the immediate duties and peculiar functions of the schoolmaster. Elevate his social, intellectual, and moral condition, but do not legislate for him with respect to methods of instruction.

In order that a teacher should be thoroughly devoted to his work, he should be duly sensible of its importance; — he should believe, that the future character of a country depends upon the education of its children; — he should be fully aware, that, in the soft and virgin soil of their souls, he may plant the shoots of poison or sow the seeds of sweet-scented flowers or of life-giving fruit; — he should realise the momentous thought, that the little prattling thoughtless children, by whom he is surrounded, are to become the men of the approaching age. As a necessary consequence of all this, he should carefully look to the predilections of children; — that child who is amusing himself with drawing triangles and circles may, under proper training, hereafter become another Pascal; — that little dirty urchin, who is plucking flowers by the wayside, may become the poet or the orator of his age; — that thoughtful, feeble boy, who is watching the effect of the steam, as it blows and puffs from the tea-kettle, may become another Watt, destined to multiply the resources of our national wealth and power; — that ruthless little savage, who is leading the mimic battles of the snow storm, may become (unless his evil tendencies are counteracted by education) another Napoleon, who may seize with a giant's grasp the iron thunderbolt of death, and on the wreck of a people's hopes and happiness build himself up a terrible monument of guilt and greatness.

The work of the soul-devoted teacher should not cease with the school hours; — the predilections and spontaneous ebullitions of feeling in children, in their moments of leisure and play, should be carefully watched by him, in order that he may encourage and aid the development of what may be good or useful, and be able to suppress, or direct into a legitimate channel, what may be evil or dangerous.

Under a new and better order of things, an efficient soul-devoted teacher will become one of the great thinkers of his age. His leisure hours will be given to the study of the philosophy of mind and the principles of method, and his daily labour will consist in the practice of that philosophy and those principles. Child of hope! despair not in the discharge of your arduous duties, and doubt not but that public opinion will award to you that social position to which your talents and usefulness entitle you; — toil on in all faith and humility! the hour of your emancipation is not distant,— injustice is always followed by a reaction,— and the dark, cheerless period of debasement and uncalled-for self-sacrifice will be followed by light and gladness, when under the blessing of God you shall possess the means as well as the capabilities for adding to our knowledge of the science of method as applied to education.

Experiments required to test Systems of Education.

A system of instruction may be formed with a due regard to the abstract nature of the being to be educated, but it may not be practicable under the conditions and circumstances of a given school, where perhaps large masses of children have to be taught under the supervision of one master, with limited material aids; hence it is necessary that all systems should be brought to the test of experiment.

Whilst sound principles of education gain new force by every fresh confirmation of their truth, false theories lose some portion of their hold on the prejudices of men by every new exposure of their fallacy. Some thoroughly digested systems of experiment are yet desiderated in education. The form and object of experiments are directly under our control, and in this respect the results of experiment are more valuable than facts derived from observation and ordinary experience. For this purpose we should like to see some experimental school established under our Government Inspectors, where, for example, any two rival systems of instruction might be placed exactly under the same circumstances with the view of determining their relative efficiency. People generally are slow in adopting what are called improved methods; their prejudices are always in favour of what is old and English, and nothing but an *experimentum crucis* will alter their predilections. Many old systems are associated with certain extraneous circumstances which consecrate their errors and give them an apparent truth. Thus, for example, the individual system of teaching, which at present obtains in most of our middle class schools, is so interwoven with the system of *home instruction* that we cannot see all the evils of this system so fully as we should do if it were standing on its own merits. It should be stripped of this favourable association in order to exhibit it in its true aspect. And it may be here worthy of observation, that it would be well for us to ascertain, with some degree of exactness, how far this home instruction should be employed in connection with the system of collective teaching, which is at present in operation in our schools for the poor.

The importance of experimental facts may be illustrated by the history of physical science. Before the time of Galileo it was believed that water rose in the common pump from nature's horror of a vacuum. An experimental fact was wanting to expose the fallacy of this hypothesis; that fact was supplied to Galileo by the workmen of Tuscany when they found that water would not rise in the barrel of a pump higher than 34 feet. In like manner, we may find that some fortunate experiment or fact of observation, may lead to a reversion of some of our existing dogmas in education. In conducting experiments, it may be useful to observe, the truth of a great general system of education may be confirmed in two ways, viz., by altering the conditions under which it is made to act, or by altering the intensity of the element which constitutes its distinguishing feature. When the pupil of Galileo substituted mercury for water, to test the presence of atmospheric pressure, he rightly considered, that if there was a constantly acting law of pressure, the column of the one fluid would be to that of the other in the inverse ratio of their densities ; it is well known, that the result of the experiment confirmed the truth of the theory. Not satisfied with this confirmation, Pascal proposed to try the *experimentum crucis* by varying the intensity of the operating principle, and he therefore had the Torricellian experiment performed upon the top of a mountain, where the atmospheric column was diminished ; the result of this experiment, it is scarcely necessary to say, fully established the great principle of atmospheric pressure. In like manner, it may not be too presumptuous to suppose, the truth of many of our general theories and systems of instruction may be confirmed or overthrown.

To estimate the Results of Method.

Without undervaluing the communication of positive knowledge in the education of children, we should in general attach the greatest importance to that system which tends most to develop and improve their intellectual and moral powers. But it is possible, that, in our regard for this darling idea, we may overlook the fact that the study of those subjects which are the most useful is generally the most instructive. The school of the poor should never become an intellectual gymnasium, where the future destinies of the children are disregarded. Children, in the course of nature, become men and women, and their pursuits and studies in school should prepare them for playing their parts in the great world in which they must move and act. In the education of a young gentleman, it matters little whether his muscles are strengthened by digging in the garden, or by exercises with the parallel bars in the play ground ; but with the child of poverty it is very different,— his lot is labour, and labour should form a part of his school training : to an Eton scholar, it may be of little consequence whether he learns land-surveying, or whether his tutors teach him to decipher Egyptian hieroglyphics or any other hieroglyphics, provided his intellectual powers are exercised and developed ; but with the son of the mechanic it is different, — his period of school training being limited, he has no time to spare for learning things which have only a remote bearing on his future employment; to him, the school room should be, in a certain sense, the vestibule of the workshop. In estimating, therefore, the results of systems in primary schools, a due regard should be paid to this two-fold aspect of education.

In the education of adults the matter is somewhat different, for in this case the chief end, if not the sole end, of class instruction should, obviously, be the communication of that knowledge which shall be immediately and directly beneficial to them in their respective avocations.

The object of education should be to develop all the faculties of our nature — physical, intellectual, and moral; and that too in harmony with one another. A system sometimes tends only to develop one set of faculties to the neglecting of all the others. When this is the case, the teacher should adopt some system which shall be supplemental to the other, so that the two systems, acting in conjunction, shall exercise all the faculties of the pupils. The same observations apply to the subject of study. For example, the study of arithmetic, or geometry, exercises the mind in only one kind of evidence — *mathematical evidence;* therefore, in this case, the teacher would do well to give, side by side with arithmetic, some easy lessons on physical science, where the mind of the pupil is exercised in *moral evidence.*

CHAP. III.

TO ASCERTAIN THE NATURE OF THE BEING TO BE EDUCATED. — GENERAL FACTS AND PRINCIPLES. — PRIMITIVE INTELLIGENCE THE BASIS OF DEVELOPMENT. — CLASSIFICATION OF THE FACULTIES. — ESSENTIAL POINTS CONSIDERED IN RELATION TO METHOD.

TO ASCERTAIN THE NATURE OF THE BEING TO BE EDUCATED.

As a knowledge of human nature is the true basis of the science of education, it is essential to the discovery of general principles of method, that we should have a complete record of general facts relative to the development of the intellectual and moral faculties, and that it should be fully ascertained, by actual observations and experiments, what subjects and methods of instruction are best calculated to aid the development of these faculties at the different stages of their growth: in order to complete the science of education, we require something more than a mere knowledge of the general principles of mental philosophy. Such a course of inquiry would not only contribute to advance the science of education, but it would also give us a more complete view of the natural history of the human mind.

It has been said, that psychological analysis will lead us to a knowledge of the laws regulating the development of our faculties; but in the inquiry we may be very much aided by observing how humanity, or the mind of society, has developed itself in the different stages of its advancement; that is to say, how the mind of man has discovered truth after truth, and built up science upon science, in attaining our present elevated condition of civilisation and intelligence. It is obvious that the mind, considered HISTORICALLY, that is, OBJECTIVELY, must give us the broad features of the mind considered *per se*, that is, SUBJECTIVELY. Those natural instincts and impulses which evince themselves in the individual mind, must undoubtedly exhibit themselves on a grand scale in the development of the race itself, or the mind of man acting in society.

We give the following as amongst the most important general facts or laws relating to the development of the faculties.

GENERAL FACTS RELATING TO THE DEVELOPMENT OF THE INTELLECTUAL FACULTIES.

1. The faculties follow a law of progressive development.

2. They are cultivated by being *properly* exercised on appropriate subjects.

3. They are weakened by being over-tasked, or by being exercised on inappropriate subjects. They admit of a wrong development.

4. All our knowledge of the material world is derived through the senses. Material objects, and the various phenomena of the external world, are the subjects upon which the faculties first exercise themselves. Material aids promote the activity of all the faculties.

5. The natural force of the faculties differs in different individuals.

6. The voluntary faculties, such as attention, are influenced by motives. Children like to do things in company with one another. With children, the natural and most healthful incentive to attention is the association of pleasure with instruction: nature has connected a refined intellectual pleasure with the healthful exercise of the faculties; curiosity or the desire of knowledge, and the love of the beautiful and the wonderful, are the great actuating principles of early childhood, and their gratification is always accompanied by pleasurable emotions. Unnatural modes of instruction give rise to harsh and vitiating modes of discipline.

7. Habits are formed by the repetition of the same acts.

The habits of attention and concentration are the great main-springs of education. The habit of directing the undivided or concentrated force of the faculties to a given subject is never fully acquired in early life, — children love change and novelty.

8. One class of faculties may repose whilst another class of faculties is being exercised.

9. The faculties are most vigorous when they are exercised voluntarily. The principle of self-dependence is one of the most powerful agents of culture. Children have a natural craving for knowledge as well as for occupation.

10. The strength of any faculty and the desire for exercising it, are greater according as it has been more or less called into activity. The sooner a faculty is called into healthful action, the greater, other things being the same, will be its strength. The cultivation of the reasoning faculties should not be too long delayed.

11. The faculties, in the course of their development, act and react upon one another. The complete development of any faculty depends, more or less, on the development of some other faculty.

The mind is really one indivisible substance having different states and modes of action ; these states and modes of action being called faculties.

Some of the faculties are almost simultaneous in their action as well as in their development.

All the faculties of the mind exist in a greater or less state of activity at every stage of development.

The mind *as a whole* admits of cultivation at every stage of development. The moral faculties may be cultivated in connection with the intellectual faculties; and so on.

12. For the purpose of culture, the faculties may be divided into groups or classes.

13. Our subjects, as well as our methods of instruction, may be varied or modified to suit the different classes of faculties.

14. Each class of faculties has its characteristic motives of action as well as habits of action.

15. Each faculty has a primitive state corresponding to its spontaneous development. Primitive judgments form the basis of all our knowledge.

Certain faculties have also distinct states of development corresponding to the subjects upon which they are exercised. These states have an important bearing on early education.

16. All our knowledge is derived from three sources, viz., *Sensation*, *Reflection*, and the *Primitive Laws* involved in our mental operations.

PRIMITIVE INTELLIGENCE, AS SHOWN IN PERCEPTION AND INTUITION, CONSIDERED AS THE BASIS OF DEVELOPMENT.

There is a pre-established harmony between external nature and the laws regulating the operations of the mind. Through sensation, or the impressions derived from the senses, the immaterial (the mind) comes into contact with the material, and springs (through its own inherent energies) into all the various forms of developed intelligence. Without sensation the mind could not germinate; and without the reflex power, which the mind exercises over these sensations, intelligence could not exist; but this is not all,—the awakened intelligence derives fresh vitality from the primitive laws involved in its own operations. Hence our knowledge, the aliment of intellectual life, is derived from the three following sources: Sensation, Reflection, and Intuition, or the Primitive Laws involved in our mental operations.

The infant soul contains *implicitly* all the faculties of the developed intelligence: reason is there with all its essential characteristics, but it is there only in its intuitive form. The mind intuitively comprehends and feels the relations subsisting between itself and the external world, without being able at once to give its knowledge anything like a formal or abstract expression. It spontaneously and unconsciously forms primitive judgments or inferences, recognises the beautiful and participates it, and acts under the conviction of certain fundamental principles of belief. All the materials of perfect intelligence exist in these primary or primitive intuitions, but they have to be reduced to definite forms and consistent combinations.

Nature is truly a revelation. To the human soul nature speaks in an intelligible language, which the brute cannot understand. The brute looks on nature as it looks on a book,—it sees lights and shades, but nothing beyond; on the contrary, the human intelligence at once deciphers the symbolic characters of that book. The validity of our intuitive perceptions must, therefore, be referred to this pre-constructed harmony between the soul and nature.

Our primitive intuitions comprehend judgments, sentiments, and fundamental principles of belief.

Perception is the first stage of intelligence; but perception, regarded as a distinct stage of intelligence, involves something more than a summation of sensual impressions. By perception we become immediately conscious of the *qualities* of material objects. Out of our perceptions arise certain necessary and intuitive judgments. We perceive the properties of an object separately as well as in connection with the object considered as a collective unity, and thus recognise and distinguish objects by their properties; every such cognition, obviously, involves a judgment; in point of fact, a proposition, which, though not expressed, is not the less felt and understood as such. We perceive the physical qualities of an object, but we apprehend something more,—we are conscious that *the me*, the percipient, is distinct from, and independent of, the *not me*, or the thing perceived. The sentiment of the beautiful is intuitive: we look at a flower;—we perceive that it has a certain shape, size, and colour; but we apprehend far more than this.—the perception is associated with pleasurable emotions and an indefinable *sense of the beautiful* fills the soul. We listen to an exquisite piece of music;—we have a perception of tone and time, but along with this we have the perception of *harmony*. The moral and religious sentiments are intuitive: the virgin simplicity of a child's moral nature is too apparent to require illustration; education too often blights this original simplicity. Our intuitive sentiments involve some of the deepest thoughts and principles of our existence.

Our primitive judgments or intuitive perceptions are, of all our forms of intelligence, the most vivid and comprehensive. They give us all the elements of our subsequent knowledge, not in signs, or abstract representations, but immediately, in our self-consciousness. They are universal and invariable, for they are found as well in the savage as in the civilised man. They are necessary and absolute; for to be different from what they are is impossible. They are formed spontaneously and intuitively; that is to say, anterior to and irrespective of any reflective processes; they are unreflective because they are spontaneous, and spontaneous because they flow directly from the primæval harmony existing between the material and spiritual worlds. They embody all our experience; that is, experience in its most comprehensive sense.

Our experience (according to the usual acceptation of the term) comprehends the knowledge derived from sensation and reflection; but does our knowledge stop here? We must be careful that we do not leave out some element of the inquiry, and then repair the mutilation by arbitrary inventions. The fact is, all knowledge *begins* with experience, but it does not *end* with experience. There are certain intuitive principles of belief, as well as certain primitive judgments, such as the relation of cause and effect, which cannot be derived from experience. Let us propose the question:—What is our primitive impression relative to causation? Do we regard it simply as a relation of succession, of antecedent and consequent, or something more? Now the relation of succession, which is really derived from experience, is a very different thing from the relation of cause and effect. When we say that fire melts wax, we mean something more than that the phenomenon of fluidity succeeds the phenomenon of the contact of fire; in fact we believe that there is some active principle in the fire which produces the fluidity. Again, our acts are not only sequences to the operation of the will,— we regard them (from the primitive laws of our mental operations) as the direct effects of our volitions. Thus, every act of attention is voluntary, but every voluntary act is characterised by the circumstance that we consider ourselves as the responsible cause of it. A cause, therefore, is not merely an antecedent to a phenomenon, it is something more; it possesses an active productive power; we cannot escape the conclusion, for it is involved in our mental existence. To adduce any further illustrations of the nature of our fundamental principles of belief is unnecessary; enough has been said to render manifest the general truth,—that they are based on the laws which the Creator has established.

Every branch of knowledge must pass through the intuitive before it can reach the abstract form; that is, the form of abstract representation. There is a reality, a depth, an exhaustlessness, in our primitive knowledge, but it is vague and undefined; it must become *objectified* before it can become definite; it must be fixed in the representative form of language before it can become an element of exact science.

Such is the primitive intelligence,—the intelligence of perception and intuition. We now enter upon a new and broader platform of development. Hitherto all our cognitions have been *immediate;* that is to say, they have flowed directly from the sensations derived from concrete things; now the faculties of memory, conception, and representation come into active play, and create a new world of cognitions, at once spiritual and material,—the world of ideas, of signs, and representations. The facts of perception are no longer idealised impressions, existing as it were only subjectively, or in our consciousness; they now assume the representative form of language, which is a symbolical representation of thought, whereby we give a sort of independent and external existence to the results of mental operations. The mind translates all its primitive judgments into language, and the judgments so symbolised are called propositions. Primitive propositions (like primitive judgments) express the relations of concrete things. Language expresses our primitive judgments first in the form of primitive propositions: but by the aid of the faculty of abstraction, these judgments are gradually generalised, and then the corresponding propositions become general and abstract. Again, by the faculty of abstraction we separate the elements of a proposition in order to consider them separately: these elements are abstract ideas. Thus, in the development of the understanding, we begin with judgment; then follow propositions; and last of all we have abstract ideas: judgments are formed by the faculty of judgment, one of the original functions of the mind.

We have observed that primitive judgments expressed in language are called propositions, or it may be axioms. Now it is important to bear in mind that these abstract representative forms involve nothing more than what is contained in the primitive forms. When you tell a child (with your "subject, copula, and predicate") that "A rose is beautiful," you tell him nothing but what he previously knew and apprehended in the form of a primitive judgment; this is what you really do,—you show him how to express his primitive judgments in language, and thereby show him how he may give fixedness and precision to his intuitive cognitions; that is, how he may give to his silent thoughts and emotions "a local habitation and a name."

The law regulating the acquisition of knowledge is this: we cognise the concrete before the abstract, the concrete being the simple, the abstract the difficult. Primitive judgments formed in connection with the sensations derived from concrete things, precede abstract representations and processes requiring the exercise of abstract judgment and reason. A child judges of the colour of an object before he has formed any abstract idea of colour; he judges of the relation of numbers before he has formed any idea of number apart from its concrete representations; he judges of form before he has any cognition of the abstract definitions of form, and so on. Primitive judgments form the basis of all our knowledge, whether of abstractions or of processes of reasoning. An axiom is an abstract expression of a primitive judgment formed in relation to the perception of actual objects; these judgments exist in the mind and form the subjects of perfect cognition before they are regarded in their axiomatic form. Thus, for example, a child would not understand you, if you were to tell him, that two and three make five in consequence of the axiom, that the whole is equal to the sum of its parts; but he would think and reason in accordance with it if three objects and two objects were placed before him in order that he might ascertain their sum.

Primary education begins with the culture of our intuitive perceptions; this culture chiefly consists, in affording occasions and stimulants for their development, and in fixing them in the mind by means of representative language: this is what we mean by the cultivation of the perceptive faculties. Hence object lessons, picture lessons, &c., constitute the best forms of early culture.

To enlarge on this subject, at present, is unnecessary, enough has been said to render manifest the general truth,—that the young mind, at every stage of its development, is more or less influenced by the culture of the primitive or perceptive faculties.

CLASSIFICATION OF THE FACULTIES OF THE MIND.

The mind has INTELLECT, FEELING, *and* WILL. We think, we feel, we act, that is to say we have thoughts and feelings, and we have also the power of controlling our thoughts and feelings. Hence our internal phenomena comprehend INTELLECT, FEELINGS OF EMOTIONS, and WILL. The ideal type of the human soul (the image of God) consists in the full and harmonious development of these three elements; the intellect, in this perfect state of development, is characterised by FREEDOM OF THOUGHT; the emotions by BENEVOLENCE OR LOVE; and the will by UNRESTRICTED POWER. Under proper culture (with the blessing of God), the soul gradually assimilates itself to this perfect state of development. It is true, that in the present world, we may never reach this ideal state of development, nevertheless we may be constantly tending towards it.

The strength and activity of a faculty depend on the force of the will which animates it; and in like manner, the character of our emotions is determined by the active force of the will. If we want to ascertain the stage of development of the intellectual and moral faculties we must look to the state of the will as regards its freedom: this is the true index to all the other operations of the mind. In infancy, when the faculties are feeble, there is little or no voluntary power; the mind is chiefly governed by instincts and intuitions. On the other hand, as we acquire more and more intellectual and moral power, so we gain more and more force of will. Our acts (intellectual as well as moral) are determined by actuating principles; that is to say, by motives, by habits, and by instincts. Our force of will and thought is evidenced by the character of our actuating principles.

Four distinct Stages of Development.

There are four phrases in our language which have reference to four characteristic or distinct stages of mental activity: I *perceive* the thing; I have a *conception* of the thing; I *know* or *understand* the thing; and I can *prove* the thing. The faculties called into operation in the first act maybe named the PERCEPTIVE FACULTIES; those in the second, the CONCEPTIVE OR REPRESENTATIVE FACULTIES; in the third, THE KNOWING FACULTIES or the faculties of the understanding; and in the fourth, THE REASONING FACULTIES. These four classes of faculties characterise four distinct stages of intellectual development. Co-ordinate with these four intellectual stages we have also four distinct stages of development of the emotions and will. The first intellectual stage is marked by a maximum of sensibility with a minimum force of will; the second by a diminution of sensibility with an increase of the force of will; the third by a further diminution of sensibility with a further increase of the force of will; and the fourth by a minimum of sensibility with a maximum force of will. These four stages then respectively comprehend the condition of the intellect, the emotions, and the will; that is, of the whole mind. All the functions of the mind, more or less developed, exist in these different stages; at the same time it must be understood that one stage gradually merges into that which succeeds it. These stages of development separately exist under a condition of transition and assimilation. The commencement of each is marked by the birth of a new faculty which had previously existed only in a latent or embryo form. They are distinguished from one another by the peculiar activity of the faculty which characterises each; and they are mutually connected by the necessity of a certain amount of simultaneous action and development.*

The classification of the intellectual and moral faculties here proposed, is distinctly exhibited in the following tabular forms.

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* The following mode of representation may aid the conception in realising the mutual relations of these stages of development.

Human intelligence, in its different forms of development, is intermediate between the animal organism, the zero of intelligence, and the infinite. Between the zero of intelligence and the infinite there are four ascending stages, respectively continuous, but each joined to the one which succeeds it by an abrupt line of connection indicating the explicit development of a new power. At each step of the ascent, we approach the infinite and recede from the zero. At the base of these four ascending stages or platforms of development, we place the line which marks the level of the animal organism. Ascending from this base line, we have the first stage of development which marks the region of Intuition: somewhat abruptly this stage connects itself with the second stage of development, which marks the region of representation, and so on, until we arrive at the most elevated stage of human development, the region of thought and reflection, which continually approaches the line of infinite elevation without ever reaching it. However high human intelligence may rise in the region of thought, it must always be infinitely removed from the infinite intelligence, the image of God; but the first stage of human intelligence in its descent approaches nearer and nearer, until it is indefinitely near to the zero of intelligence, the animal organism.

I. CLASSIFICATION OF THE FACULTIES OF THE MIND AS A WHOLE.

Stages of Development.	The Intellectual Faculties.	The Moral Faculties.	
		The Feelings.	The Will.
1st. Stage.	The Perceptive faculties.	Passive emotions and sentiments.	Instinct and passions with little voluntary power.
2nd. Stage.	The Conceptive or Representative faculties.	Sentiments, active emotions, and affections.	Instincts and passions, with some voluntary power.
3rd. Stage.	The Knowing faculties, or the faculties of the understanding.	Affections more enlarged and active.	Considerable force of Will.
4th. Stage.	The Reasoning faculties.	Benevolence or Love.	Freedom of Will.

II. CLASSIFICATION OF THE INTELLECTUAL FACULTIES.

Stages of Development.	Characteristic Class of Faculties.	General Character of each Class.	Individual Faculties in each Class.
1st. Stage.	The Perceptive faculties.	Intuitive.	Sensation. Perception. Attention. Observation. Retention. Primitive judgment or intuitive perception.
2nd. Stage.	The Conceptive or Representative faculties.	Representative.	Memory. Imitation. Conception. Imagination. Association. Recollection. Representation as exhibited in language. Primitive judgment associated with conception.

Stages of Development.	Characteristic Class of Faculties.	General Character of each Class.	Individual Faculties in each Class.
3rd. Stage.	The Knowing faculties or the faculties of the Understanding.	Cognitive.	Abstraction. Classification. Generalisation. Explicit comparison, composition, and analysis. Judgment, &c.
4th. Stage.	The Reasoning faculties.	Cogitative.	Reason as exercised in: Demonstration; Induction; Explicit Observation, Reflection; Speculative thinking, &c.

Explanatory Remarks.

FIRST STAGE.—Here the characteristic faculty is perception; but all the faculties of intelligence must exist rudimentally or implicitly in this stage of mental phenomena. The chief motive principles are instinct and intuition; yet at the same time, it must be observed, that there cannot be the slightest consciousness of a sensation without an act of attention, that is, without some activity of will. On the whole, our mental phenomena, at this stage, are characterised by sensibility and sentiment, rather than by thought and reflection.

Observation is a compound faculty comprehending (more or less according to circumstances) Discernment, Comparison, Composition, and Implicit Abstraction. Observation may be either implicit or explicit; that is, it may be to a great extent an unconscious act of the mind, or it may be in the highest sense a voluntary act, performed from a preconcerted plan and for the attainment of a specific and defined object. In the latter sense, observation is decidedly a faculty of reason; in the former sense it belongs to the perceptive class of faculties.

Primitive Judgment is the faculty of judgment in its first or primitive form, by the exercise of which the child at once cognises simple truths or intuitive propositions. Observation and Primitive Judgment may be regarded as the rudimental or embryo forms of Reason.

Retention is the primitive or rudimentary form of memory. With a slight effort of will the prominent features of an impression are retained in the mind; this power we have called retention: but after the impression has entirely faded from the mind it is revived or recalled by the power of memory. By attention the mind lays hold of sensational impressions, idealises them, and fixes them in the soul in the form of primitive knowledge. Strictly speaking, we do not retain the sensational impression, but only those prominent portions of it to which the attention has been most powerfully directed, and which the mind has idealised, or made as it were part of itself. We look intently at a striking object,—we close our eyes; the image of the object is retained in the mind not by a conscious effort of will, or by an ordinary act of memory, but by a power somewhat resembling it. The products of sensations, constituting the results of experience, soon find a lodgment in our mental treasury, and of their existence the mind becomes conscious whenever similar sensations are presented. The recurrence of the same sensation gradually gives rise to the power of consciously recalling it.

In this stage, external phenomena and their relations are viewed, less as subjects of *thought* than as objects of *sentiment* and *feeling*: the mind, standing as it were face to face with the objects of perception, is necessarily more engaged with the contemplation of the objects themselves than with its own self-consciousness; hence the mind is more sensual than reflective. Now a new class of faculties, memory and conception, are about to play their part in the mental history, and to draw the mind more away from the dominion of mere sensational impressions: We now pass from the sphere of perception and intuition to that of conception and representation.

SECOND STAGE.—Here the first faculty to be considered is MEMORY. We exercise this faculty when we recall ideas or intuitions with the *full and distinct consciousness* of the connection between the type and the antitype.

Attention, as a decidedly voluntary power, now exercises the most powerful influences in the development of the other faculties. We look intently at an object of beauty; a sensation is produced, the attention is aroused: we look again at the object and examine all its prominent features, as well in their relations to one another as in their relations to the object as a whole; we idealise the sensation, that is, we throw it into a form suited to our apprehension: here the mental operations involved in the act of perception enable us readily to recall the image we have consciously constructed. Strictly speaking, memory is a repetition of a mental operation accompanied with the consciousness of its prior existence; what we recall is simply the product of the mind's operations. When we remember a thing we reproduce the mental operations connected with the immediate perception of it.

The next faculty to be considered is CONCEPTION. In every act of memory the image which is recalled is always connected, in our consciousness, with the actual impression which had been previously produced by the object: but this image may become so idealised that we at length lose sight of its connection with the original impression; in fact, the idea, apart from the object itself, may become a distinct object of consciousness and contemplation: this mental process is called conception. The peculiar function of conception is to store the mind with ideas formed out of our immediate perceptions, by aid of attention and memory. This accumulation of ideas tends to elevate the mind more and more above the influence of external impressions; to give the mind a more independent existence; to engage it more in the contemplation of the world of its own creation, — the world of conceptions and inward representations. IMAGINATION is a higher kind of conception; the latter is *reproductive*, the other *productive* or *creative*. Imagination combines and modifies our conceptions of existing things in such a way as to produce a purely ideal or fictitious representation. Conception is something more than memory on the one hand, and something less than imagination on the other.

The faculty of ASSOCIATION now gives us a new power over our mental operations,—it gives order and arrangement to our ideas and conceptions, and enables us to represent them by signs and symbols. By the faculty of association certain sounds and written signs become suggestive of, or associated with, certain ideas: the *name* of a thing, for example, whether spoken or written, becomes associated with the conception or idea of the thing, so that the presence of the one suggests that of the other. But we arrive at this result progressively. The origin of language gives us the origin and natural history of the faculty of representation. Our first outward signs of ideas are gestures: a nod is the representative of an affirmation; a shake of the head, of a negation, and so on. Our natural wants are also indicated by characteristic gestures. Sounds imitative of the peculiar cries of animals are taken as the signs of the idea of those animals. Our natural expressions of pleasure, pain, surprise, &c., also readily become the symbols of the mental states which they indicate. Spoken language naturally comes before written language: a child perceives a particular object; we point to it and express its name: the process is repeated until at length the *idea* of the object and the *name* of it are inseparably associated in the child's mind. A child interprets a life-like picture as we do a book; he reads in that picture the history of the acts, passions, and habits of the creatures represented. Picture writing is the next obvious stage in the representative process, and it is not difficult to conceive how the pictorial process of representation would gradually merge into a purely symbolic representation. A written language, then, composed of arbitrary symbolic characters, is the highest evidence of the free exercise of the representative faculty. It completely *objectifies* our ideas, and gives, as it were, a twofold existence to the products of thought. Words and ideas exercise a reciprocal influence on each other: the visible representation suggests its corresponding idea, and the idea suggests its corresponding representation.

By the faculty of RECOLLECTION we retain words, and, through them, reproduce the ideas which they symbolise.

THIRD STAGE. — Language not only enables us to express our ideas by signs or words, but it further enables us to express the various relations which these ideas bear to one another, that is to say, it enables us to express our judgments in the form of propositions. This is a step in advance of the foregoing stage of development. Now we have to express our primitive judgments, embodying all the results of our experience, in the form of propositions; but besides this, we have to classify, extend, and generalise these judgments, and to express them in the form of general or abstract propositions. The faculties of abstraction, classification, and generalisation, which have been hitherto only incidentally and implicitly exercised, must now be methodically and explicitly brought to bear upon the materials of knowledge.

There are two kinds of abstraction, viz., mediate and immediate. In mediate abstraction, we compare the qualities of different objects, reject their differences in order to fix upon their resemblances, and from these resemblances we derive a general or abstract idea. In immediate abstraction, we compare the parts or qualities of a single object; eliminating and neglecting the individual and variable parts, we disengage the general and invariable part, and give it the form of an abstract or general idea. In both cases the end proposed is the derivation of a general idea: this general idea, being fixed and expressed by a term, will be henceforth used as a common sign of a complete class of phenomena. The mind, by fixing its attention on abstract words, or general terms, as the signs of ideas, disengages itself from the minor details involved in the contemplation of the concrete world.

Having gained a new store of abstract and general terms, we express our judgments in those terms, and thus derive abstract propositions. We *compare* abstract terms with each other, so as to determine their agreement or disagreement; we *analyse* propositions expressing our judgments, and put the elements together in another form better suited to our apprehension. These mental operations indicate that we have passed into a higher region of thought, and that we have arrived at an altitude of development which gives us a wider, a more exact, and a less obstructed range of view than we had at the anterior period of development.

Fourth Stage.—Being provided with the great instrument of thought—language—reason now freely expands itself; it wings its ways into every region of inquiry in search of truth; it methodises all its materials of thought, and proceeds to investigate truth according to certain definite and explicit modes; it lays down certain self-determined principles of action, and suborns to itself all the other operations of the mind; with a penetrating and comprehensive glance, it looks back upon all the processes of thought through which it has passed, and links the past with the present, and the present with the future. Reason, in this condition of freedom, is not merely cognitive, it is also cogitative; it not merely seeks knowledge, but it also seeks to discover the sources of knowledge;—it endeavours to penetrate truth to its very centre,—to trace truth in its origin, history, and consequences.

Inductive. reasoning leads us to a knowledge of the general laws of nature; deductive reasoning enables us to tell the antecedents of any given phenomenon, and to foretell its consequents. By abstract or speculative reason we attain a knowledge of *universal truths*, embracing alike the laws which govern the operations of nature, and the operations of thought. Our intelligence is now much higher in the scale of development, than that which we characterised by conception and understanding; it contains the ideality of the one combined with the exactness of the other; it embodies all the anterior developments in one harmonious definite unity:—in short, it is complete freedom of thought under the condition of law and responsibilty.

ESSENTIAL POINTS TO BE CONSIDERED IN RELATION TO METHOD AS APPLIED TO EDUCATION.

I. The nature of the faculties.

II. The subjects best adapted for the cultivation of each class of faculties.

III. The nature of the motives acting on each class of faculties.

IV. The habits of action to be established in relation to each class of faculties.

V. The methods of instruction adapted to each class of faculties.

VI. Application of results to the different periods of education.

I. NATURE OF THE FACULTIES.

The nature of the faculties may be viewed under the following aspects:—

1. The peculiar function of each faculty.
2. Mutual relation of the faculties.
3. Classification of the faculties with respect to their simultaneous cultivation.

1. *The peculiar Function of each Faculty.*

What we have further to adduce relative to the nature of each faculty, has a special bearing on method as applied to education.

It has been observed, that reason and other faculties of thought exist in a rudimentary form at the very earliest stages of development; but there is a period in our intellectual growth when these faculties attain certain definite or explicit states of development. So far as regards the purpose of elementary education, it may be assumed that each faculty may exist in two distinct states of development; viz., in its first or simple form of development, or in its latest or complex form. What, then, are the characteristics of these two states?

Certain faculties may exist in distinct and determinate states of development, depending for the most part on the

nature of the subject of instruction; that is to say, whether the subject be concrete or abstract.

In general a faculty will exist either in a simple or in a complex state, according as the subject to which it is directed is concrete or abstract. Thus, we may have either simple conception or abstract conception; simple abstraction or complex abstraction; simple memory or recollection, ideality or imagination; intuitive reasoning or abstract reasoning, and so on. These faculties at the first stage of their development have simple and definite functions, whereas at the latest stage they assume new and more complex functions as we rise higher into the region of intellection. It is true that these two states of development gradually merge into each other, according as we blend the two classes of subjects together.

CONCEPTION.—*Our simplest conceptions* are formed by the aid of models and pictorial representations; *abstract conception* is the conception of a thing formed from a verbal description of it.

IMAGINATION.—This faculty, in its latest state of development, creates fictitious scenes and events, and invests mere abstractions with all the qualities of vital existence. But the IDEALITY peculiar to young children is very little removed from simple conception: with the aid of visible representations they form the idea of absent objects or distant scenes; a stick with a rag tied round it is invested with all the qualities of a living baby; a small picture enables them to realise the idea of an unseen reality: in this case the ideal conception is formed in connection with the concrete representation.

ABSTRACTION.—A child's first abstractions are derived from a comparative examination of the properties of concrete things: He forms an abstract idea of number by counting various familiar objects: he forms the abstract conception of a quadruped by observing the fact that cats, dogs, horses, &c., have a certain quality in common, viz., four legs or four feet. Whereas in some of our higher abstractions the subject undergoes a process of intellection, or intellectual elaboration, before the abstractions are completed. Thus, in order to realise the idea of a noun, the child must frequently form a double or complex abstraction; for *the name* of a thing (e. g. bird) is a noun, not *the thing* itself; on the other hand, a horse is really a quadruped.

Some eminent writers on education assert "that the faculty of abstraction is the *latest* in the development of the human mind." Now this is only true as regards the faculty of *complex abstraction*, for even young children readily exercise the faculty of *simple abstraction.*

Ideas of number, form, magnitude, weight, colour, &c., belong to our simple abstractions; ideas connected with our mental operations, the analysis of language, pure science, &c., belong to our complex abstractions.

Reason.—A child's reasoning chiefly consists in making simple deductions or inferences from palpable facts or from the relations of concrete things: whereas reason, in its highest form of development, investigates the relations of abstract things. Mental arithmetic, taught by objects, calls into activity this early or first form of reason: physical laws, geometry, &c., taught in the same manner, also exercise this first form of reason.

The peculiar function of reason is the investigation and recognition of truth; but in every process of reasoning there is always something taken for granted or assumed to be true. The truths assumed may be self-evident axioms, facts derived from observation and experiment, principles derived from induction, or abstract propositions which have been previously established. When a child reasons about familiar things, or familiar phenomena, the axioms forming the basis of his inferences are not expressed in an abstract form of language,—they are rather understood from their actual and special relation to the subjects or objects; in fact, his belief in these axioms is of that silent, unconscious, instinctive kind of belief.

The simplicity or complexity of a process of reasoning depends upon, 1. The nature of the subject; 2. The method; 3. The nature or form of the axiomatic truths or propositions, as the case may be.

1. The nature of the subject. The subject may be

either concrete or abstract. In the former case, other things being the same, our reasoning will be simple or intuitive ; in the latter case abstract.

2. The method may be experimental, inductive, tentative, or some other method which appeals to the perceptive faculties ; or it may be abstract, that is, the method may appeal to the reflective faculties, and not to the perceptive faculties. In the former case, other things being in keeping, our reasoning will be simple or intuitive ; in the latter case abstract.

3. The nature or form of the axiomatic truths or propositions. These may be explained in connection with the particular subject, or they may be expressed in the form of abstract truths. In the former case, other things being in keeping, our reasoning will be simple or intuitive; in the latter case abstract.

Hence we come to the general conclusion, that our reasoning will be more or less abstract or difficult, according as the faculty of abstraction is more or less exercised in the process.

That our intellectual faculties may exist in two distinct states of development seems to have been overlooked by teachers, as well as by educational writers: these states, as we have endeavoured to show, depend on the nature of the subject to which the faculty is directed; the concrete exercising the simple form of the faculty, and the abstract the complex form of the faculty. The result of this misconception has been that the cultivation of the higher faculties has been too much neglected in our elementary schools. We have no hesitation in saying that the higher faculties, in their first or simple forms, may be healthfully exercised at an early age. A child of seven years readily forms simple abstractions, and reasons clearly about concrete things.

2. *Mutual Relation of the Faculties.*

The following points of relation are worthy of consideration:—

1. Relation of succession. 2. Relation of assimilation. 3. Relation of aggregation.

1. Relation of succession. In our various mental processes there is a natural order of succession as regards the action of the faculties. Thus, sensation is followed by perception; perception and attention are followed by memory and conception; conception, observation, &c., by abstraction; and so on. This order of succession seems to correspond with the order of development as given at p. 63.

2. Relation of assimilation. All the faculties are at first feeble and circumscribed as to their modes of action, but under proper culture they gradually gain strength and assume new modes of action. This growth and development is in many cases equivalent to the assimilation of one faculty to another. Thus:—attention *intensified* becomes *concentration*, or that faculty whereby we direct the undivided force of the faculties to a given subject. *Observation intensified* and *methodised* becomes an important element of inductive reasoning. The conception of a thing, from a verbal description, is an ideal operation nearly allied to imagination. The conceptive faculties verge upon the abstractive faculties: to form a true and complete *conception* of a complex object we must *examine* its parts, *compare* them with each other, and form a conception of them separately as well as in their relations to the whole. And so on to other faculties.

3. Relation of aggregation. A complex mental operation may be regarded as an aggregation of certain simple operations. Each class of faculties has a leading faculty characterising the group. Perception is the leading or characteristic faculty of the perceptive faculties; conception and representation, of the conceptive and representative faculties; the judgment, of the knowing faculties; and reason, of the reasoning faculties. Each successive group may be regarded as an aggregation of all the faculties in the groups preceding it, connected with the faculties peculiar to each group.

The different states of a faculty depend on the mode of the aggregation.

RECOLLECTION, or philosophical memory, is SIMPLE MEMORY acting in conjunction with the faculty of association, and sometimes with that of reason.

IDEALITY is the ideal faculty acting in conjunction with the perceptive faculties. IMAGINATION is a more ideal kind of conception.

SIMPLE ABSTRACTION is the abstractive faculty acting in conjunction with the perceptive faculties. COMPLEX ABSTRACTION is the abstractive faculty acting in conjunction with the conceptive faculties or the representative faculties, or with an abstraction previously formed.

INTUITIVE REASON is the rational faculty acting in conjunction with the perceptive faculties, and it may be with simple abstraction. ABSTRACT REASON is the rational faculty acting in conjunction with complex abstraction.

In order to cultivate any faculty, or class of faculties, we should make ourselves acquainted with the mode of aggregation.

3. *The Faculties considered with respect to their simultaneous Action and Cultivation.*

The connection between some of our faculties is so close that we cannot exercise one without exercising another. Thus, perception, as well as conception, is almost always associated with primitive judgment, &c.; the faculty of conception cannot be exercised without memory; the faculties of conception and language are invariably exercised together, — the conception of a thing and the name of the thing are almost inseparable; the faculties of abstraction and classification depend upon those of conception and comparison; reason and judgment presuppose the development of observation, conception, comparison, abstraction, and language; and so on.

As many of our faculties are almost cotemporaneous in their action, the cultivation of one class of faculties necessarily involves the cultivation of some other. To cultivate any faculty by itself is scarcely practicable, and, indeed, if it were practicable, it is not desirable. In giving a lesson, the skilful teacher suits his instruction to the cultivation of a series of faculties having a mutual affinity.

Each class of faculties may be cultivated by itself or in combination with some other : special attention should be given to the leading or characteristic faculty in each class. But certain combinations are more eligible for simultaneous cultivation than others. The conceptive and representative faculties should be cultivated along with the perceptive faculties. Memory depends solely upon the activity of attention. Language, especially technical and abstract terms, should be first taught in connection with the exercise of the perceptive faculties. Abstraction, judgment, and reason, in the early states of their development, should be cultivated in connection with the observing or perceptive faculties. The recollective faculty, or simple memory combined with the faculty of association, should be cultivated in connection with the reasoning faculties. And so on to other cases. As a general rule applicable to early training, we should say, that the perceptive faculties should form the basis of cultivation for all the other faculties of the mind.

II. THE SUBJECTS BEST ADAPTED FOR THE CULTIVATION OF THE DIFERENT FACULTIES.

CLASSIFICATION OF SUBJECTS.—The leading topics of school instruction may be reduced to five.

1. The knowledge and application of facts and principles of direct observation, under which may be included Object Lessons, Lessons on familiar natural phenomena and natural history, Mental Arithmetic, Drawing, Writing, Speaking, Meaning of terms and phrases, &c.

These subjects specially cultivate the perceptive faculties, and the conceptive and representative faculties together with simple abstraction and intuitive reason.

2. The knowledge and application of signs and symbols,

to which we may refer Reading, Orthography, Symbolical Arithmetic, &c.

These subjects chiefly cultivate the representative faculties.

3. The knowledge of facts generally, which includes descriptive Geography, Natural History, Narratives, History (especially of our own country), &c.

These subjects specially cultivate the knowing faculties.

4. The knowledge of general laws and abstract relations, to which we may refer Natural and Experimental Philosophy, Physical Geography, Arithmetic, Algebra, Geometry, Grammar, &c. These subjects specially cultivate the reasoning faculties.

5. The knowledge which inculcates sentiment and excites reflection, comprehending General Reading, Poetry, Music, Religion, &c.

These subjects specially cultivate the imagination and all the higher or reflective faculties, together with the moral and religious sentiments.

III. NATURE OF THE MOTIVES ACTING ON EACH CLASS OF FACULTIES.

The most important motives of action, so far as relates to intellectual culture, are as follows: —

1. Curiosity, or the desire for knowledge. 2. Love of the beautiful and the wonderful. 3. The pleasure connected with the healthful exercise of the faculties. 4. The pleasure of success. 5. Sympathy and emulation. 6. Desire of approbation. 7. Hope of reward. 8. Fear of punishment. 9. Love of distinction. 10. Love of truth. 11. Sense of duty. 12. The pleasure derived from the possession of knowledge and the consciousness of power.

The first four motives are specially applicable to the cultivation of all the faculties at their early stages of development; as far as regards the cultivation of the perceptive, conceptive, and representative faculties, scarcely any other motives of action are necessary. But the range of motives must be enlarged with the growth and development of the faculties. The cultivation of the knowing and reasoning faculties frequently requires the aid of almost every legitimate motive. Motives of action should be varied according to the diversities of intellect, character, and subjects of instruction. When one motive loses its power another may be effective.

IV. THE HABITS OF ACTION TO BE ESTABLISHED IN RELATION TO EACH CLASS OF FACULTIES.

The most important habits of action, so far as relates to intellectual culture, are as follows:—

1. Continuous attention. 2. Careful observation. 3. Vivacity—Earnestness—Mental activity—Promptitude. 4. Docility—Veneration—Obedience—Order—Exactness. 5. Self-reliance—Thoughtfulness—Self-culture—Self-examination — Self-control. 6. Concentration — Abstractive attention — Systematic study — Analytic examination—Distributive classification of knowledge—Realisation and self-appropriation of knowledge—Decision of character—Strenuous and laborious application. 7. Reflection—Candour —Devotedness in the pursuit of truth—Self-dedication—The philosophic spirit—Correct thinking, speaking, writing, and feeling.

The first five habits should be specially cultivated in relation to all the faculties at their early stages of development: These habits, however, have a special relation to the perceptive, imitative, and conceptive faculties; but the range of habits must be enlarged with the growth and development of the faculties. The habits included in the 6th group should be established in relation to the exercise of the knowing or understanding faculties; and those included in the 7th group should be established in connection with the cultivation of the reasoning faculties.

V. THE METHODS OF INSTRUCTION ADAPTED TO EACH CLASS OF FACULTIES.

The general principles of Method, contained in chap. IV. are more or less applicable to the cultivation of all the faculties; and Part II. of this work contains specific methods for the cultivation of the different classes of faculties.

VI. APPLICATION OF RESULTS TO THE DIFFERENT PERIODS OF EDUCATION.

Five Educational Periods.

Our early life may be divided into five periods. 1. Infancy, comprehending about four years. 2. Early childhood, extending from four to about seven years of age. 3. Childhood extending from seven to about ten years of age. 4. Early youth, from ten to about fourteen years of age. 5. Youth, extending from the age of fourteen to manhood.

First Period. Infancy.

The infant has first to acquire the right use of its senses. During the later part of this period the perceptive faculties attain a considerable degree of vigour and acuteness; and the conceptive and representative faculties, constituting the first evidences of mental existence, also characterise the later part of this period. As the brain, the organ of thought, is in an imperfect state, our instruction should be entirely of a desultory character; we should wait for the spontaneous development of the faculties. Speaking, singing, and the names of familiar objects constitute the chief subject matters of instruction.

Second Period. Early Childhood.

This period is marked by a greater activity and precision of the conceptive and representative faculties, associated to some extent with the knowing faculties, and the first glimmerings of reason. The sensibilities of the child are also quickened, and the impressions produced by external objects are deeper and more lasting. Attention, at first spontaneous, now becomes a voluntary faculty. At the early part of this period instruction should be identified with amusement, and all technical learning should be carefully excluded. We should invest our subjects of instruction with some charm calculated to engage the feelings. During this period the mind should be prepared for commencing the exertions required at the subsequent period. Without being technical or strictly systematic, our subjects of instruction should be comprehensive, the exclusive object of all our instruction being the development of the faculties. Speaking, singing, object lessons, lessons on striking natural phenomena, picture lessons, mental arithmetic, and the facts of Scripture (life of Christ, &c.), should form the chief subjects of instruction throughout the whole of this period. At the latter part of this period, writing, drawing, reading, common arithmetic, and geography should be taught in such a way as to form the basis of future instruction. Intuitive truths, or simple propositions, may also be taught as inferences from familiar facts.

Third Period. Childhood.

This period is chiefly marked by the dawn of reason and imagination, and the fuller development of the faculties of the understanding. During this period, the studies of the preceding period should be extended and associated with easy processes of reasoning and abstraction. The abstract terms and phrases of language, arithmetic, geometry, natural science, and grammar, should be taught in connection with their concrete forms. Lessons on general knowledge should also be given, comprehending simple stories, narratives, historical sketches, and descriptions of natural scenery, in prose as well as in verse.

Fourth Period. Early Youth.

Although the perceptive and conceptive faculties still maintain their ascendancy, yet during this period the understanding and reason attain a certain degree of strength. Reason now gives strength and vivacity to all the other faculties, and especially to the recollective faculty. As the mind is now capable of more sustained exertion, the habit of intensified attention, or the habit of directing the undivided force of the faculties to a given subject, should form an important object of culture. The subjects of instruction belonging to the foregoing period should be enlarged, and studied more systematically, yet not without a due regard to the imperfect state of the reflective faculties. Language, mathematics, and the physical sciences and useful arts, should be specially studied, not only as means of intellectual culture, but also as subjects having a direct bearing on the business of life.

Fifth Period. Youth.

During this period all the faculties of our nature attain their full development. Every subject must now be studied in its most technical and systematic form; that is, supposing the preceding periods have been duly improved. Every study must now be pursued with earnestness, vigour, and determination; and duties, requiring strenuous and continued labour, should be performed with cheerfulness and exactness for the sake of the end to be attained. Competitive examinations and rewards now become appropriate as well as powerful stimulants to exertion. During this period the subjects of study should have a special bearing on the profession or business for which the youth is being educated.

CHAP. IV.

GENERAL PRINCIPLES OF TEACHING, OR ELEMENTS OF METHOD.

Have we arrived at any well recognised general principles of method as applied to education? If so, what are they? Unfortunately the philosophy of method has never yet been systematically studied by practical teachers, nor have its principles been fairly applied by them with the view of determining what are the true general principles or axioms of education. However, a careful induction of recognised psychological facts has led us to regard the following as deserving a place amongst those axioms or general principles. The unsettled state of our knowledge on this subject will form the best apology for the imperfection, or it may be the errors, of the following summary of general principles.

It will be observed, that many of these principles give different faces or aspects of the same general principle; such aspects are essential to the full development of the subject matter, and give a precision and a distinctiveness to the different modes in which an important general principle may be applied.

I. *Our methods of education should act in co-operation with, and should form adjuncts to, the natural order and mode of development of the physical, intellectual, and moral faculties of the children; in short, we must teach children after the way by which nature intended that they should be taught.*

This must comprehend all other general principles of education.

The faculties of children develop themselves slowly; one faculty shows itself before another; some are as active, and almost as vigorous, in the child as they are in the full-grown man,—such as perception, simple memory, curiosity, &c.: on the contrary, certain faculties never attain their full development until the child has arrived at the period of maturity,—such as recollection, or philosophical memory, imagination, abstraction, reason, &c.

All the faculties are invigorated by being properly exercised; whereas, on the other hand, they may be enfeebled by being overtasked, or by being exercised on subjects which do not come within their proper sphere. The subjects of instruction as well as the methods of instruction should be adapted to the strength of the faculties.

Our business is not to destroy any faculty, but to follow out the intentions of nature in relation to its development;—our business is not to create any faculty, but to cultivate all the faculties which God has bestowed upon the child, according to the plan or method which He has ordained.

The cultivation of any faculty should have a relation to the period at which it devolops itself; thus, for example, the faculty of observation is strong in young children, that of abstract reason is weak; hence we should communicate knowledge to young children through their perceptive faculties, and we should at the same time be careful that we do not overtask the faculty of reason. Certain faculties attain distinct states of development corresponding to the growth of the mind as a whole: ideality, simple abstraction, and intuitive reason are developed at an early period; whereas complex abstraction and abstract reason are the latest in the development of the human mind.

As a first condition of success in teaching, the master should be thoroughly acquainted with the laws regulating the development of the faculties of the being to be educated: his work becomes comparatively easy and pleasant when his methods of instruction are framed in accordance with these laws.

The various faculties require distinct modes of cultivation; so that what may be requisite for the development of one, may not be best adapted for the development of another; one course of study may cultivate the faculty of recollection, another course that of imagination; and so on. In order, therefore, to give a full elucidation of this subject, it is necessary that we should consider the various faculties of our nature in detail, with the view of determining the best modes for their respective cultivation. This we purpose to do in another part of this work. But there are certain general principles which have respect to the development of the mind as a whole, and these we purpose to consider before giving an account of the cultivation of particular faculties, or particular classes of faculties.

On the cultivation of peculiar tempers and talents of children, Locke observes: "We must not hope wholly to change their original tempers, nor make the gay pensive and grave, nor the melancholy sportive without spoiling them. God has stamped certain characters upon men's minds, which, like their shapes, may perhaps be a little mended; but can hardly be totally altered and transformed into the contrary. He therefore that is about children, should well study their natures and aptitudes, and see by often trials, what turn they easily take, and what becomes them; observe what their native stock is, how it may be improved, and what it is fit for: he should consider what they want, whether they be capable of having it wrought into them by industry, and incorporated there by practice; and whether it be worth while to endeavour it. For in many cases, all that we can do, or should aim at, is, to make the best of what nature has given, to prevent the vices and faults to which such a constitution is most inclined, and give it all the advantages it is capable of. Every one's natural genius should be carried as far as it could; but to attempt the putting another upon him, will be but labour in vain; and what is so plastered on, will at best sit but untowardly, and have always hanging to it the ungracefulness of constraint and affectation."

II. *The chief object of primary education is to develop all the faculties of our nature, physical, intellectual, and moral. At the same time the development of the faculties of children above a certain age, should have a due regard to their future employment in the present world, as well as to their future destiny in the world to come. Instruction should be characterised by the principle of utility and development.*

The first ten years of a child's life is peculiarly the period of development. During this period the acquisition of knowledge is in itself a very secondary object,—it is a *means* for securing a great *end*, and that end is the development of the faculties. No knowledge, however valuable in itself, can compensate for the deadening influence which its acquisition may have had upon the faculties of the child ; on the other hand, no knowledge, however trifling in itself, should be despised which enlivens and invigorates these faculties.

The mind, from its very constitution, seeks to develop itself. A boy is not a mere recipient of knowledge; his faculties are continually developing themselves by exercise. Everything in the world around him tends to stimulate this development. His Creator has placed him in this beautiful world, where all its laws and phenomena tend to quicken, develop, and elevate his physical, intellectual, and moral faculties. The creature should surely follow out the intentions of the Creator !

But educators, in the place of fostering this development, have too frequently directed their energies to counteract it, — instead of regarding knowledge as a *means*, they have looked upon it as an *end*. " Some propose (observes Woodbridge) as the object of all their efforts, to communicate as much positive knowledge as possible : they often produce living encyclopædias, unfit for useful activity. Others perceive how little this accumulation of abstract knowledge avails in preparation for active life, and direct their attention almost exclusively to matters of a practical nature. On this plan, there is no small danger of producing mere *instruments* for others—men almost incapable of original thought or independent action." These systems taken separately are obviously imperfect. The faculties, as we have already shown, can always be developed in harmony with the useful nature of the subjects of instruction, for what is most *instructive to the mind of the boy* will generally be found to be the most *useful to the man;* so that, in reality, there is not necessarily any antagonism between the principle of utility and that of development. Without losing sight of the importance of practical knowledge, especially at the later stages of elementary instruction, the truly enlightened educator will ever regard the development of the faculties as the great end of all his teaching ; but from the various useful matters of instruction, he will always select that which is best calculated to secure this end, and his mode or system of teaching will always have a reference to the same great end. The question with him will not be,—have I conveyed the greatest amount of technical knowledge in the least possible time? have I engrafted the ideas of the man upon the mind of the boy? but it will rather be,—have I awakened any element of intellectual or moral vitality, which had hitherto lain dormant? have I invigorated or purified any faculty which had hitherto existed in a feeble, or in an imperfect state of development? and has all this been attained with a due regard to the future pursuits and destiny of the pupil?

"England expects every man to do his duty." The schoolmaster has a sacred duty to discharge in relation to his country,—he has to educate his pupils in such a way that they may be fully prepared for carrying out the work which she expects them to perform. England has a great destiny to fulfil! on her empire the sun never sets! she holds under her sway the fairest and richest portions of the globe! and to all of them she has to extend the blessings of her civilisation. What our people have done for North America, we have yet to do for South Africa and Asia; the jungle, the lair of the lion and the tiger, has to be converted into corn fields and gardens; our mining appliances have to be transported to the gold fields of Australia; railways, facilitating the transport of material and produce, have to be constructed in all our great colonies; and our various forms of machinery, economising time and labour, have to be established wherever nature affords facilities and scope for their application. Now which is the class of men best qualified for carrying out this mighty work? Is it our classical scholars and abstract mathematicians? Surely not: we want men of heads and hands; men of skilled labour, thoroughly conversant with all our practical sciences and arts. Teachers! such is the class of men at present wanted by your country, and the training of such men should form one great object of your school instruction.

III. *But the end of education is not merely to develop the faculties of the child, it is also to develop them all in harmony with one another, and with a due regard to their proper order and relative importance.*

Nature, or rather the God of nature, intended that the development of the intellectual and moral faculties should be complete and harmonious, that no faculty should be cultivated at the expense of another, and that every vicious and morbid tendency should be restrained and corrected. The work of education should be *corrective* as well as *directive.* The basis of our instruction, as well as the methods of instruction, should be commensurate with the complete development of the faculties.

Every faculty should be cultivated the moment it is capable of healthy action, for the ultimate force of any faculty is dependent upon its early exercise, not less than upon the frequency with which it is exercised. In early youth all the faculties are under our control, and may be readily moulded by education ; but at a later period they acquire such a rigidity and set as to resist further change or improvement.

Whilst all the faculties have each an independent mode of action, and admit of distinct modes of culture, the complete development of one faculty often depends on the exercise of another ; for example, the faculty of recollection, which is the most perfect form of memory, depends upon the exercise of the reasoning powers. We should not, therefore, unnecessarily defer the cultivation of the higher faculties.

In many of our schools, no means are employed for the cultivation of the perceptive and observing faculties, and the reasoning powers are either entirely neglected or cultivated upon too narrow a basis.

That system of instruction is especially defective which cultivates the intellectual powers and neglects the training of the affections and moral feelings.

The system, practised in too many of our schools, of cramming boys with a knowledge of particular subjects, is not only erroneous in method, but highly reprehensible on the ground of moral principle. One boy is almost exclusively taught drawing, another mental arithmetic, and so on, with the view of exhibiting, at some public examination, the little intellectual prodigies to an admiring crowd of visitors. This one-sided system cannot be too strongly denounced ; it is a lie of the most mischievous character,—it is deceptive in its aim as well as in its results,—it heartlessly sacrifices the future happiness of the child to pander to a morbid taste on the part of the public for witnessing cases of unhealthful precocity of intellect. The school-room should never become a hot-bed for stimulating the growth and development of early genius. As all the boys, in each class of a national school, breathe the same air, engage in the same physical exercises, and subsist upon the same kind of diet, so, as a general rule, the same intellectual and moral aliment will be found suitable to the appetites of all, and the same instruments of development will be found adapted to the powers of all. If it be requisite to adopt any exceptional rule to the general form of class instruction, we should say, let the master specially help those that cannot help themselves—let him check the wayward, and at the same time let him gently lead the feeble nurslings of his flock ; let him specially care for the dunces, and leave the geniuses, under certain restrictions, to care for themselves. That school is not in a healthful condition, where there is a great disparity in the attainments of the pupils, and where there is a want of an harmonious development of all the faculties and susceptibilities of the pupils. At the same time, it must be conceded, that the management of peculiar tempers, dispositions, and tastes must depend upon the individual skill and judgment of the master. While he adheres to his general plan of class instruction, he will not "permit himself to misapprehend, or to pervert according to his own contracted views, that which the Creator has ordered in infinite wisdom,"— he will not confound the amiable and good with the mischievous and wicked,— he will not discourage the intelligent and industrious by connecting them with the ignorant and lazy, and when mere class arrangements fail in giving a proper scope for the exercise of the minds of superior boys, he will assign them some special duties for their self-improvement and development.

IV. *In order to promote the harmonious development of the faculties, instruction should be progressive,—the range of subjects, as well as the methods employed in teaching them, should be extended and completed as the faculties of the pupil are expanded and developed.*

According to this method, the instruction first given to little children should be as simple as possible. But as their minds become more and more developed, the subject matter of our instruction should be extended and systematised accordingly, and the range of instruction, as well as the manner in which that instruction is carried out, should be duly proportioned to and commensurate with the growth of the faculties. It is a false idea to suppose, that we can teach children from a perfect text-book on any given subject.* It is a law of our intellectual and moral nature that we never arrive at a perfect knowledge of any subject at once ; that can only be attained by mastering the different parts of it little by little, and time after time. The leading or prominent points of the various departments of human knowledge, must be fully understood by the young mind, before it is capable of entering into the details and systematic combinations forming any complete science. Hence our instruction should not only be progressive, as regards the development of particular departments of knowledge, but should also be progressive as regards the development of the *ensemble*, or the collection of subjects which constitute the matters of instruction. Let us take a few examples.

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* The plan of employing complete text-books has, in my opinion, contributed to the formation of more dunces than Nature herself has ever produced. Our so-called perfect text-books rank amongst the greatest evils to be found in our present system of instruction. The very completeness and so-called strictly logical arrangement of these books, are the great causes which render them unsuitable for the development of the juvenile mind. The system which these books pursues is not the system which nature lays down for the development of the human faculties; the juvenile mind is, at the very threshold, repulsed by the stately order of their definitions, their axioms, their postulates, and their abstractions. No wonder that such a system, followed out rigidly, has caused pedagogues and task-masters to place the stamp of dunce upon the brow of some of the highest orders of intellect, and to drive such intellects from the close hot-beds of school instruction to seek for that healthful development which is to be found in a free and unrestrained communion with the objects of nature. All unnatural and constrained systems of education invariably disgust boys of superior minds, and cause them to seek the development of their faculties in the way by which nature intended they should be developed.

In the teaching of grammar, we should not teach from any perfect text-book, such as Murray's or Morell's, but we should first go through a very simple, yet comprehensive system of grammar, explaining the simplest and most prominent definitions and principles, without following them into their minute details.

In the teaching of practical geometry, we should first give the pupils a simple preliminary course of instruction, selecting the most simple, striking, and useful problems, and arranging them according to the most simple and natural order.

In the teaching of arithmetic, we should first carry the pupils through a simple and comprehensive course of calculation, embodying all, or nearly all, the fundamental operations of numbers, before we attempted to carry them through the so-called systematic course of arithmetic, involving long and irksome calculations, intended to give expertness and skill in the manipulation of numbers, rather than to awaken and invigorate the intellectual faculties.

In the teaching of familiar sciences, we should first teach just so much of all the useful sciences, without a slavish regard to their technical arrangement, as could be comprehended by the pupils at their particular stage of intellectual development, constantly observing, at the same time, that the subjects of instruction are arranged according to their order of simplicity and natural affinity, rather than according to their order of conventional classification. For example, if we wanted a child to understand two laws or principles, which had some analogy with each other, or depended upon some common principle, we should not trouble ourselves with inquiring whether the one law belonged to statics or the other to hydrostatics; it would be enough for our purpose to know that the one would enable us to illustrate the other. And so on to the treatment of other subjects.

V. *Our system of teaching should foster the principle of self-development and self-instruction.*

Children like to discover things, and to do things, for themselves, and they always attach the highest value to the knowledge which is thus acquired. The suggestive method of instruction is admirably calculated to foster this principle of self-development. A knowledge of the properties of objects, of the elements of number, and of some of the most obvious laws of nature may be readily taught in this way. In the course of our instruction we should regard the little pupil, not as a mere recipient of knowledge, not as a passive machine to be moved at our will, but as a thinking and voluntary agent, capable of collecting ideas, and even of originating them, when the proper materials or subjects of thought are placed before him. But the teacher must not allow his pupils to wander in a wrong direction in search of truth. He must be constantly by their side, to shield them from danger, and to guide them to truth,—to correct their errors, and to confirm their discoveries. In order that this spirit of self-development may be maintained in a condition of vigorous activity, the teacher should never require his pupils to do anything which they are not able to do; and he should never tell them anything which they are capable of finding out for themselves. His teaching should be suggestive. As one of the best means of self-development,

We should foster voluntary efforts.

The teacher should constantly endeavour to incite children to voluntary efforts; this is especially applicable to subjects of home instruction. With the generality of children this may be readily effected: instead of saying to a boy — "Come! you *must* learn your lesson; if you do not I shall *whip* you very severely,"— it would be much better to say to him — "You have an interesting lesson to learn to-night; when you have done with your play you will, I am sure, find pleasure in learning it." We should catch children in the proper frame of mind for learning; and if they are not in that frame of mind, when we want to give them instructions, we should endeavour to create it. The usual seasons of amusement should never be selected for graver kinds of instruction; for in order that children may give an earnest attention to any subject, their minds should not be pre-occupied with any matter of particular interest.

We should catch the clue of thought in a child's mind, and then, by following it out, give it the direction which we wish it to take. In short, we must observe, follow, and then lead. By this means, we may acquire an unlimited control over the child's intellectual and moral habits, without exercising any positive constraint on his liberty of action.

By this method, we not only cultivate the reflective and inventive powers of the child, but we foster the principle of self-dependence, which is so essential to his future success in life.

Independence of thought is nearly allied to invention; and children are capable of both. Children are more inventive at six years of age, than they are at ten: and independence of thought, like the first untainted odour of the fresh flower, loses its power as the child advances in years. Our present systems of education seem to check the growth of the inventive faculties, by filling the mind with knowledge, rather than attending to the development of original power. We teach too much by authority, and pay too little regard to the independence and unbiassed exercise of the reasoning powers. When we put a question to children, we generally let them know, one way or another, what sort of answer we expect from them, and they, as a matter of course, in the place of thinking and judging for themselves on the matter of inquiry, endeavour to find out what our view of it is, and frame their answer accordingly. Boys thus ape the habits of thought and manners of men so much, that they lose the beautiful bloom of early childhood, long before the reflective period of manhood has commenced. In this way they may acquire knowledge, but it is gained at a fearful cost. Why do we not encourage children to make and invent things? why do we not give them the means of constructing toys and simple machines, and of making simple experiments for themselves? The answer is apparent—we are too desirous of moulding the infant soul after our preconceived ideas. Newton's first invention was a little water mill; and Watt's first steam-engine, at least as far as principle is concerned, was his mother's kettle. Why have we so few thinkers amongst us, and so many great scholars, whose heads are so filled with the ideas of others, that they have no room for any thoughts of their own? Because we keep constantly filling the minds of our children with ideas, but rarely seek to develop that power which gives a command over those ideas.

VI. *In early childhood our subjects of instruction should appeal to the senses.*

The first object of instruction should be the development of the perceptive and conceptive faculties; this is best done by a series of graduated lessons on the properties and uses of external objects. These lessons, if properly conducted, open up to the mind of the child the first great sources of knowledge, awaken curiosity, encourage a laudable spirit of inquiry, and cultivate habits of observation and attention. Beginning with the most familiar things, such as the properties and uses of the articles about the house, the teacher advances with slow steps, making sure that his pupils comprehend, as far as it is desirable that they should do so, every successive lesson; and as their faculties expand, the teacher takes care that the subject-matters of instruction are enlarged accordingly.

Before a child can think, he must be supplied with the first elements of thought; the names and properties of external objects constitute these first elements. Objects are distinguished from one another by their properties, and a knowledge of these properties can only be acquired by sensation and perception; in fact, the child must see these properties before he can have any idea or conception of the objects to which they belong. One body is round or square, black or white, hard or soft, transparent or opaque, solid or fluid, &c., according to the impression which the body itself produces upon the senses of the child; hence it follows, that the educator should convey a knowledge of the properties of objects, and the names by which they are called, in connection with the actual perception of the objects themselves. The name of a thing, or the name given to the properties of a thing, should never be given apart from the perception of the thing itself. After the thing is withdrawn, the name of it, as well as the conception of it, remains fixed in the mind; the vividness and truthfulness of the conception formed of a thing being always in proportion to the intensity of the interest which the thing itself excited in the mind. Thus words are always associated with ideas. A child's *mental existence* almost entirely depends on the exercise of the faculty of *conception.*

At this early stage of development, the proper intellectual aliment is *a knowledge of facts,*—these facts become the first subjects of reflection, and thus prepare the way for a higher development. As the first step in philosophy is to make a collection of facts, so the first stages of instruction should be the communication of a knowledge of facts, without any attempts to convey a knowledge of causes, for this should belong to a higher and subsequent period of instruction. Nothing can be more out of place, or more absurd, than the attempts of authors, as well as of teachers, to explain the causes of familiar phenomena to very young children; or to bring down to the level of their capacity subjects which presuppose the intelligence of riper years. Such instructors fill the head of the pupil with learned words and phrases, which convey no positive idea to him; torture his memory and understanding with a catalogue of frightful names; and render the work of education a painful infliction in the place of a delightful duty.

A knowledge of the properties of external objects should be taught by comparison and contrast, and things that are unknown by those that are known. Thus, for instance, in explaining the property of transparency, we should show that glass is transparent,—that there are other bodies which are also transparent,—that there are some bodies which are only half-transparent or semi-transparent,—and that there is a great number of bodies which are opaque. Here the property is made a subject of comparison and contrast. Again, the picture of a tiger, aided by the resemblance which he has to a cat, will enable us to convey a sufficiently correct conception of this gigantic specimen of the feline race: thus we should say to the child;—A tiger is a great wild savage cat, which can tear an ox in pieces with its large claws and teeth with as much ease as our house cat can tear a little mouse. In this way we should convey a knowledge of the unknown thing, by means of the qualities of a thing that is known. Commencing with what the child knows, we conduct him by easy gradations to a knowledge of what he does not know. In like manner, the conception which the child forms of his *earthly father* enables him to form an idea of his *heavenly Father:* thus he readily understands what is meant by the language—"Our Father, which art in heaven."

Pictorial representations aid us in giving vivacity and vigour to the faculty of conception.

We should lead the child to draw simple inferences from the properties of the objects presented to his senses, Glass scratches copper,—glass is harder than copper. Iron sinks in water,—iron is heavier than water; wood floats on water,—wood is lighter than water: and so on.

The great end to be attained by object lessons is to familiarise the young mind with the meaning of scientific terms and facts, so as to facilitate the systematic study of science at a later period. Water *flows* from one vessel to another,—water is called a *fluid*. Lead is a solid, but the heat of the fire causes it to *melt*,—lead is *fusible*. Water boils in the kettle; the heat makes the water boil; the *steam* that you see coming out of the mouth of the kettle is water in the form of *vapour*,—what you see going on is called *vaporisation*. A little water is spread over a plate; the water gradually disappears;—what you see going on is called *evaporation*: and so on. These lessons should, of course, always be methodical and suited to the ages and capabilities of the children. Some of the most important properties and definitions of numbers and geometrical figures may be readily taught by means of tangible objects.

Object lessons to be instructive and interesting should always contain something fresh and sparkling. Unfortunately teachers are too much in the habit of reiterating again and again the same sort of lessons containing similar enumerations of properties, &c. Such teachers seem to have no idea that progress should characterise all our instruction. In our object lessons we should always leave something for the conceptive faculty to work out; by this means we give an intellectuality and ideality to our lessons: graphic pictures and striking contrasts or analogies interest the feelings, and thereby give depth and vigour to the conceptions; things that are visible are associated with things that are invisible; objects that are near with those that are distant; events that are present with those that are past; and the present and the past taken together constitute the clue by which we penetrate the mazes of the future.

A child must take many things as facts of observation which he may have afterwards to establish by a process of abstract reasoning, or by a process of induction; and it necessarily follows that many of our first lessons, in certain departments of knowledge, must be imperfect; we must often rest satisfied with giving tangible demonstrations when logical processes would fail to be understood; and where demonstrations cannot be given, illustrations must supply their place; we must teach particular forms of propositions when the general form lies beyond the intellectual grasp of the child; and many truths, plain and almost tangible in themselves, will be accepted as axioms or as facts, which would not be classed under that category by the learned logician. Simple expositions of familiar and important truths not only exercise and develop the mind, but they are the most efficient means of imparting real positive knowledge.

VII. *The reasoning and higher faculties should be cultivated on an enlarged basis of instruction.*

The subject matters of instruction should be commensurate with the expansive nature of the faculties. Our rich stores of scientific and useful knowledge furnish us with the means of giving a superior kind of culture to the reasoning powers. The present basis of school instruction is not broad enough to afford scope for the full development of the reflective faculties. In addition to the subjects of language and mathematics, some of the most useful and interesting branches of physical science should be more thoroughly and systematically taught in our upper schools, not only as a means of intellectual culture, but also on account of their immediate bearing on the business of life.

Whilst a sufficiently large basis of instruction gives breadth and expansiveness to the reflective powers, a narrow basis tends to give them a set or leaning, which stands in the way of their future development. Now we maintain that these faculties are cultivated only imperfectly by means of classics and mathematics,— they do not properly exercise all the reflective faculties; they are too limited in range and too abstract and scholastic in form; they do not sufficiently bear upon the great purposes of life, or prepare the boy for fulfilling the duties of the man. As all kinds of philosophical apparatus can now be purchased at a comparatively cheap price, it is to be hoped that teachers will suit their instruction to the advanced state of our science and civilisation, and that they will no longer restrict their subjects of instruction to that narrow range of knowledge which characterised an age that is past.

VIII. *Instruction should proceed from the simple to the complex.*

Although this principle of education is generally known and acknowledged, yet comparatively few teachers understand it rightly, or practise it completely. It is by no means uncommon to find teachers practising a dogmatic and technical system of instruction, while at the same time they believe that they are teaching from the simple to the complex: our dogmatic modes of instruction are simple enough as regards the work of the master, whilst they are anything but simple when considered in relation to the mental efforts required of the pupil. As this species of self-delusion is so fatal in its consequences, it is important that we should exactly understand what is meant by teaching from the simple to the complex. We teach from the simple to the complex when we explain the various particular forms of a general or abstract principle before we attempt to explain the general principle itself: or when we explain the simpler elements or parts of a subject before we attempt to teach the subject as a whole. In order to keep within the sphere of the child's capabilities, we must advance by slow and sure gradations from the things that are known to the things that are unknown. What the child *does know* should form a stepping-stone to what he *does not know*. In short we should teach a subject, little by little, *now* a little and *then* a little, until we have taught the whole of it. Let us take a few examples :—

In learning to write, the child should learn to make straight lines before hooks, and letters before words.

To prove any general principle of calculation, we should first show the principle as applied to a variety of particular examples.

If we wanted to show the nature of an abstract proposition in geometry, we should first show the principle as applied to some of the most simple and familiar cases.

To make our pupils acquainted with a technical or abstract term, we should express the idea intended to be conveyed by that term in familiar language, giving at the same time a variety of illustrations of its application.

And so on to other subjects.

If a teacher wishes to be really successful with children, he must become like a little child in thought, feeling, and action ; he must, for the time being, cease to be what he is, and become what he was once. Undoubtedly some teachers possess this remarkable power. This power, which seems to be characteristic of superior teachers, is no doubt more a natural than an acquired gift ; yet, notwithstanding, it admits of being strengthened and developed by habit and reflection. The learned tutors of colleges, and the proud men of science, laugh to scorn the humble attempts of the true teacher to simplify a process of reasoning, break down the difficulties of a problem, or illustrate the truth of a general law of nature ;—too conscious of their own mental power, they seem to have forgotten that they were once children, and that their own abstract conceptions have been the result of long and repeated efforts ; —they must have the whole of a subject taught, or none of it;—they cannot permit the gigantic proportions of a favourite subject to be reduced, or in any way stripped of their abstract formalities;—their recognised books, like holy writ, must neither have anything added to them, nor anything taken away from them ;—they would rather that the doom of stationary ignorance should rest upon the child of the poor than that he should acquire knowledge in any other way than they have prescribed. How long will authority and conventional observances continue to fetter our school literature, and to cast a disastrous shadow over the progress of education? A man may know Greek, without being able to teach grammar; and he may be master of the higher calculus, without being able to give simple expositions of the principles of arithmetic. In fact, a person may be too learned for a teacher for children; for men of profound knowledge usually expect too much of their pupils. It is said that Emmerson, one of the best mathematicians of his age, always complained that its pupils were all incorrigible dunces: the fact is not at all surprising when the dogmatic character of the man's system of teaching is taken into consideration.

Besides great skill, the teacher must possess many moral qualities, in order to develop and train the faculties of children; he must especially possess great patience, gentleness, forbearance, and faith. On this subject Woodbridge beautifully observes: "The example of our Saviour himself in the education of his disciples, teaches us the importance of applying these principles both to intellectual and moral subjects. How grossly erroneous were their ideas in reference to his character and destination; how childish and unworthy their plans and their contests; and yet with what slowness did He unfold the great truths He came to reveal!—how much did He leave to be learned after his death!—with what gentleness did He tell them, 'I have many things to say unto you, but ye cannot hear them now:'—with what patience did He bear with their errors, their follies, and their sins!—with what mildness did He generally reprove them!—Let the educator beware that he does not attempt to be wiser than his Master, and teach things which demand efforts for which the infant mind is too feeble."

IX. *Facts should be taught before causes; and experiments, illustrating general laws or principles of nature, should be given before the general laws or principles are expounded.*

In many cases, a young person can readily understand the nature of a law, if it is presented to his senses in an actual matter-of-fact form, when he would be utterly unable to comprehend the technical form in which that law is usually expressed. The particular facts, upon which any general law depends, give to that law a local habitation and a familiarised form, which enable the young mind to become, as it were, its own interpreter. General forms of expression are often little better than high-sounding terms and empty names, which, if studied apart from the facts which they comprehend, rather mystify and darken the principles involved in them than convey any instructive knowledge to the mind. The true educator will never be hasty in drawing generalisations, or in expounding causes; in some cases he will content himself with giving an exposition of general facts; well knowing that these facts, if thoroughly understood, will remain in the minds of his pupils like seeds, which time and reflection will afterwards cause to vegetate, and to grow into the full and developed forms of general principles. At the same time he will constantly bear in mind, that his facts should be taught in such a way as to conduct his pupils to a knowledge of causes and principles; and his experiments should be made so as to lead to a knowledge of physical laws. Let us take a few examples.

If I wanted to teach a child the meaning of the term elasticity, I should show by experiment the form which the property assumes in different familiar substances.

If I wanted to explain the distinctive properties of different geometrical figures, I should actually draw these figures in a way corresponding to the conditions of the abstract definitions which I should have afterwards to give.

If I wanted to teach the laws of magnetism, I should first make the experiments illustrating these laws, and then afterwards lead the pupils to express in their own language the law, or laws, which might be derived from the facts or experiments.

If I wanted to show the principle of the lever, I should divide a thin lath into a certain number of equal parts, and after balancing it on the edge of a book I should place different weights at the marks made on the lath, so as to balance each other, and then call the pupils' attention to the law upon which the equilibrium depends.

If I wanted to explain the leading principles of electricity, I should first give a series of experiments, conducted with an apparatus formed with the most familiar articles of household use, such as wine-glasses, sealing-wax, tea-trays, brown paper, gutta percha, &c. taking care that the leading facts established by the experiments were fully admitted and understood before I gave my expositions of the laws or it might be of the theories proposed to explain the operation.

And so on to other subjects of instruction.

X. *We should teach the concrete before the abstract.*

In this method of instruction we employ the qualities and uses of familiar things and objects to elucidate or explain the terms, facts, and principles of science and art. In this way we lead the mind of the pupils, from the perception of the things which are visible and tangible, to the conception of abstract and general principles. According to this principle also, the knowledge of language ought to precede the knowledge of grammatical rules ; and the meaning of abstract propositions ought to be explained in connection with their concrete forms.

Teachers often deceive themselves when they think a child has followed them in the explanation of an abstract proposition. If they would make the inquiry, they would generally find that the child had seized upon some concrete form of the abstraction, or that he had attached some whimsical sense to the terms employed. At the day-school I was taught that "a verb is a word which signifies to be, to do, or to suffer." I thought that the poor verbs were miserable little things, for all their being and doing ended in suffering. At the Sunday school I had to answer the following question, from the Assembly's shorter catechism:—"*Ques.* Wherein is the moral law summarily comprehended? *Ans.* The moral law is summarily comprehended in the Ten Commandments." Now when I answered this question I invariably thought of a small village called Moralaws which had ten remarkable trees growing near it, which I thought were something like the Ten Commandments.

This method of teaching involves the principle of what is now known by the name of the science of familiar things. Let us take a few examples.

If I wanted to explain some general property of numbers, I should do it by means of counters, or balls, or marks. If I wanted to show the nature of inflammable substances, and the properties of the atmosphere considered in relation to combustion, I should direct the attention of the pupils to the flame of a candle, and show, by various simple experiments, how the vital air maintains the ignition of the tallow, &c. Thus the facts exhibited in a burning candle become, as it were, the hooks upon which we hang our science of combustion.

No teacher need be at a loss for examples. He may find sermons in stones, valuable lessons in the toys of his pupils, and even a soap bubble may be made to discourse most excellent philosophy.

XI. *When practicable, our teaching should be constructive.*

By means of this method, as I have before explained, we, as it were, build up, part by part, or piece by piece of the subject matter of instruction, until we arrive at the completion of the whole.

For example, in explaining the construction of a machine I should not draw the whole machine and then proceed to explain the mode of its action; on the contrary, I should explain the action and construction of the different parts as I sketched them upon the black board, and when I had completed the whole, I should explain the combined action of all the parts. In like manner, in teaching drawing or practical geometry according to the constructive method, I should not draw the whole picture or figure, as the case may be, and then proceed to explain its construction; but I should explain the construction of the parts as I sketched them,—giving line upon line, and precept upon precept. In this way the instruction advances, step by step, with the progress of the pictorial representation. We suit the action to the word and the word to the action; the one illustrates the other; the language of the exposition responds to the action of the teacher and the movements of the pencil: thus the work of instruction advances by easy gradations, until the whole subject is brought before the eye and the mind of the pupil, with all the relations and combinations of its parts. The same thing is observed in the teaching of arithmetic. I write down, step after step, or process after process, taking care that each successive step or process is thoroughly understood before the succeeding step, or process, is written down. In teaching the science of familiar things, also, I should explain the properties of, and the physical or mechanical laws involved in, the different parts or portions of the object or thing forming the subject of the lesson.

XII. *Expositions of principles applied to particular cases should be given before rules.*

Mere rules never reach the depths of the soul, and are therefore forgotten as soon as they are out of use; and what is learnt by rote is little better than so much useless lumber in the mind. Rules, in many cases, are not mere negations,—they become positive evils: they rarely, if ever, aid the development of the mind; in many cases they positively retard it. By rules we attain results, without the labour of investigation. There is something soporific in rules,—something which throws an enfeebling languor over the intellectual powers,—something which inflates our vanity, without adding to our self-respect,—something which gives us the pretensions of the empiric, and the knavery of the juggler. We hold that the *Rule and Rote* system, as it is usually followed, is intellectually and morally erroneous.

To the earnest instructors of children we would say: Never teach by rules, when you can teach by principles; never get a child to learn anything by rote, until he understands the subject-matter. When he understands it, then he will readily learn it by *heart* and not by *rote;* the subject will have penetrated his soul,—he will love it, because it has become a part of himself,—it will be engraven on his mind, as with a pen of iron, and there it will remain, unchanged and unchangeable, for ever.

Some teachers, in order to gain a reputation with the wonder-loving public, put the language of the philosopher into the mouths of children,—make them recite Euclid with the volubility of parrots, and chatter about climatology, entomology, and a host of other ologies,—give them rules and technical forms by which they solve problems that demand the powers of a mathematician to investigate. Now there is deception in all this, for the pupils are made to appear what they really are not; children in years and powers, they are made to mimic all the gravity and wisdom of the sage; and what makes the deception more deeply culpable, the children themselves are made parties to the falsehood.

This method of teaching from principles is eminently calculated to foster the development of the reflective faculties;—it stands in perfect contrast to rule and rote teaching. The latter is dogmatic, the other is persuasive; the one supposes the pupil to be a passive recipient of knowledge—a mere automaton which acts as it is acted upon; the other regards the pupil as a reasoning, reflective, and voluntary being, capable of working out results by his own independent effort: the one is limited in its application to the particular subject on which it is given; the other seeks to develop those faculties in the pupil which may enable him to grapple with any subject that may arise, or, in fact, to create for himself the rules and principles which govern the science to which the subject belongs.

XIII. *Instruction should be given to children orally and collectively.*

There is nothing like the living voice, looks, and action of the master, for intensifying the attention and concentrating the faculties of children. He suits his language and illustrations to the faculties which he wishes to call into activity, and he advances with his subject, step by step, according as his pupils make progress. Teaching of this kind is a living reality, not a dead letter, like a mere reading lesson.

Children like to do things in company with one another,—they like to learn together, as well as to play together. This sympathy of association gives a cheerful tone to the mind of the instructor as well as to the minds of the instructed, and also calls into play a healthful spirit of emulation. Besides the answers of the most intelligent children form one of the best means of instructing the most backward pupils in the class.

The efficiency of collective teaching greatly depends upon the completeness of our classification of the pupils. It is of the highest importance, therefore, that the teacher should fully determine the true principles on which his pupils should be arranged in classes.

The Principle on which Children should be classified.

While the standard of instruction should not be above the capabilities of the pupil, neither should it be below them. We may kill by starving as well as by overfeeding. In like manner, our intellectual and moral aliment may be too weak and simple to supply all the elements of growth and development, or it may be too strong and stimulating for the functions of digestion and assimilation. This nourishment should be apportioned both as to kind and quantity, so as to maintain all the faculties of the child in a healthful and vigorous condition of activity and growth. The classification of the children in a school should have a special regard to this principle: they should be classified, not according to size, age, or attainments; not according to their mechanical dexterity or their progress in the technical forms of particular departments of knowledge; but according to their mental power and their capabilities of improvement and development. A boy, for example, may be an expert calculator, or he may have a good verbal memory; yet, notwithstanding, his general mental power, or capacity of development, may be defective: such a boy should be placed in a class corresponding to him in general mental power. Whenever a boy shows a decided advance beyond the other members of his class, he should be transferred to a higher class; or, if that is not expedient, he should have some special work assigned him; on the contrary, when a boy lags behind his fellows, he should either be placed in a lower class or have some individual attention given to him, in order to bring him up to the average standard of capabilities. There is no subject of school management which requires more attention and judgment, on the part of the teacher, than that of classification. We have here endeavoured to point out the true principles upon which it should be based.

XIV. *Instruction should give pleasure to children, and where this is not the case there is something wrong as regards either the mode of instruction, or the subject-matter selected for instruction. A teacher should govern his pupils by the principle of love rather than that of fear.*

The proper exercise of our faculties, whether physical, intellectual, or moral, affords us pleasure. Light is not more pleasant to the eye, or melody to the ear, than truth is to the mind, or healthful exercise to the body. Instruction must afford children pleasure, if it be given in accordance with the general principles which we have endeavoured to explain;— not that luxurious pleasure which enfeebles their character and renders them unfit for strenuous exertion, but that nobler pleasure which is concomitant with the healthful exercise of the faculties.

One of the first points to be gained in giving instruction is

To secure the attention of the children.

If a teacher once acquires this power, his work becomes easy and agreeable to himself, and instructive and pleasant to his pupils. The great secret in fixing the attention of children is to interest them — to mingle delightful associations with learning, — never to overstrain their faculties, or to fatigue them by keeping them too long directed to one particular subject. It seems to be a law of our nature, that when one faculty is exhausted by exercise, another faculty may be exercised without a sense of weariness. Thus, for example, if a boy is tired with reading history, in the course of which a particular class of faculties is exercised, such as memory and reflection, he may, without any sense of weariness, have his attention directed to some facts of experimental philosophy, where another class of faculties is called into activity, such as perception and observation. And when the mental powers generally are fatigued, then the child will feel the highest enjoyment in exercising his physical powers.

A good collective lesson should not only engage the attention by the interest which it awakens, but it should further intensify the attention by stimulating the principles of emulation and sympathy. The most healthful motives to application are supplied by the peculiar nature and form of our instruction.

When a boy gets fatigued, or overtasked with any subject, he instinctively seeks for enjoyment in talking or in play; this want of attention the grave preceptor calls idleness and mischief; but the boy is right and the master wrong; the boy is only acting in accordance with the intentions of his Creator; while the master is stupidly, ay, and impiously if it were not stupidly, acting contrary to these intentions. If the master would teach in accordance with the general principles which we have endeavoured to expound, the boy would never play when he should be at work, or allow his mind to wander in search of enjoyment, when a full measure of rational pleasure is afforded him by instruction.

With children the pleasure derived from instruction should be regarded as the chief actuating motive to attention. The too frequent use of such incitements as praise, emulation, rewards, &c. demoralises the character by bringing the selfish feelings too often into exercise. These motives tend to foster vanity, pride, envy, and other selfish emotions.

Care should be taken that the attention of the children is not withdrawn from the lessons by any extraneous noise, by the presence of too many visitors, or by any other cause. To secure these conditions, the school-room should be in a quiet spot, and its fittings should be such as to place the teacher in the most favourable position with respect to his pupils. Sometimes schools are built beneath railways, over livery stables and workshops, and even underneath burial grounds; how can the founders of such schools expect their master to teach efficiently?

These remarkable laws of our physical and moral nature give us

The Principles upon which School Routines are based.

1. The subjects of the routine should be specially adapted to the capacities of the children in each class.
2. The whole, or absolute time, devoted to any particular subject should be in proportion to its relative importance and its adaptation to the minds of the children in the particular class.
3. The period given continuously to any subject should be longer or shorter, accordingly as the subject is less or more fatiguing to the minds of the pupils.
4. The order of succession of the subjects of the routine should have a special regard to the faculties that are brought into activity by those subjects.

No two lessons should come in succession which exercise the same faculties: thus, for example, it would be erroneous to have a lesson on arithmatic immediately after a lesson on algebra, or a lesson on history after a lesson on the Scriptures. The subjects which follow each other in the order of succession should not only exercise different faculties, but there should be a variety in the form and kind of the exercises themselves: thus, for example, arithmetic may be taught after grammar, or after history; and writing, or reading, or music, may be taught after arithmetic.

5. In a well organised school, the routines of the respective classes will be framed to suit one another, so that the work going on in one class may not interfere or jar with the work going on in the adjacent classes. Thus, while a lesson which is necessarily associated with a certain amount of noise, is being given to one class, the adjacent classes should have lessons given to them which are accompanied with comparative silence; for example, while a reading lesson is being given to one class, a writing or a drawing lesson may at the same time be given to the adjacent classes.

With a due attention to these principles in the construction of routines, a large school may be maintained in an harmonious condition of activity and progress, without any unnecessary noise or confusion.

It is desirable that we should here make a few additional observations relative to the subject of

First or preliminary Lessons.

First lessons should embrace the prominent features of the subject without entering into its details,—they should be comprehensive without being profound. Children like to disport themselves in the stream of knowledge, without wishing to be plunged into its depths. The knowledge conveyed to children must at first be only superficial; like little butterflies in the sunshine, they like to taste the sweets of every flower. We assert, in spite of the frown which we imagine to be gathering on the brow of the so-callod methodical teacher, that, with little children, TRUE TEACHING MUST BE SUPERFICIAL TEACHING. But it does not follow from this, that a true teacher is a superficial teacher; he must have great skill and judgment, united with a comprehensive knowledge of the subject-matter of instruction, in order that he may be able to select from the whole mass of knowledge the parts which are best calculated to interest his pupils, and at the same time to lay the foundation of a higher and subsequent course of instruction.

It is important that we should make a distinction between the method by which the master actually teaches, and the mental process by which he arrives at the principles which should be followed in that method. While he gives a lesson to his pupils by the method of synthesis, the arrangements of the parts, &c. of that lesson must be the result of analysis.

But in our first lessons to little children, there must be a great deal of desultory teaching. Their appetite for new facts or novelties is so great that they cannot dwell long upon each. The world to them is full of wonders, and nothing gives them more pleasure than to witness these wonders. Their instincts lead them to expect that there is much that is wonderful in the works of nature, as well as of art. Their Creator, as we before observed, has placed them in a world where everything tends to develop and elevate their faculties. There is not a greater harmony subsisting between the mind of the musician and the tones of his instrument than there exists between the soul of the child and the constitution of external nature,—the one has been made for the other. The intelligent instructor will not fail to turn to account this LOVE OF THE WONDERFUL. A child looks through a telescope : how wonderful to him is the sight,—he sees the far distant towers and trees as plainly as if they were close before him! Do not mar the impressions thus produced upon his mind, by attempting to explain the causes, —let these impressions remain as facts of science, which he will afterwards understand ; he knows enough if he is told that a telescope is made of certain round shaped pieces of glass put into a tube. No disparagement to his intellect, if he does not know anything further about the cause of the effects. A child expects, from the very constitution of his nature, to see many things which he cannot comprehend; but effects and facts he can appreciate, and that is enough for him at the first stage of his instruction. Such facts are seeds which time will cause to germinate and ripen. Show a child the appearance of a drop of stagnant water through a microscope! how wonderful to him is the sight! that little drop is teeming with animal life! In like manner, many other wonderful facts in connection with natural and experimental philosophy may be taught to the child.

Our instructions should often assume the form of narratives; for children feel a peculiar pleasure in hearing stories about animals, or about the lives of little children like themselves, or about the adventures of remarkable men. A well-told story may not only convey much valuable knowledge to a child, but may also inculcate many practical principles of action.

Religion should be taught, to a great extent, in the same way: Newton, who uncovered his head when the name of God was uttered, would have taught religion to children without giving expression to a word. Vital religion, says Richter, grows not by the doctrines of the Bible so much as by its narratives; the best Christian doctrine is the life of Christ, and after that the sufferings and deaths of his followers.

Instruction should, as far as possible, be associated with amusement; in the hands of good teachers, toys, games, and pictures will become important instruments of intellectual culture. This subject naturally leads us to say a few words respecting

The Infant School System.

In the Infant school, instruction should never be separated from amusement and enjoyment. The acquisition of knowledge must be pursued as an amusement, and even the learning to read should have its pleasant associations. The great object of the infant school teacher should be to cultivate the faculties of the children by gratifying their virtuous instincts. It is, however, much to be regretted, that many infant school teachers have attempted to introduce graver subjects of instruction; better let a child of four or five years of age romp and play in the fields, than allow him to be cooped up for the purpose of committing some dull task to memory.

Children at their games are learning;—they are insensibly becoming acquainted with themselves, with the characters of their playfellows, and with the properties and uses of external things. Children teach one another, not only formally and directly, but also unconsciously and indirectly. One boy shows another boy how to make duck and drake upon the water,—how to fly a kite,—how to construct a sling, or a pop-gun, or a whistle, or a variety of other infantine pieces of apparatus. And we consider that one of the most essential, probably one of most indispensable, forms of juvenile instruction is THE BOY TEACHING THE BOY; the gravity of manhood often breaks the enchantment with which infantine knowledge is invested.

Our instructions should have a constant regard to health, physical development, and enjoyment. Children are happy little things,—they have no regret for the past, no care for the present, and no fear for the future,—they are in the spring time of their existence; the present is all enjoyment, and hope sheds an enchanting halo over the days that are to come. Who does not feel sad when he reflects that these joyous days are gone for ever? Look at the early spring birds as they skip and fly from twig to twig,—up higher and higher still among the green branches,—in the fulness of their joy, they chatter to each other and fill the woods with song,—beautiful little creatures! you remind me of happy playful childhood,—your joys are as brilliant as they are fleeting. Ruthless man! cast no shadow over this sunny period of the children's existence! let them enjoy the bliss of this transient period, as their God has ordained,—let them frisk and play,—they are doing more for themselves than you can do for them; for while they seek their enjoyment as an *end*, the Creator has ordained that this desire for enjoyment shall be the *means* of developing their physical, intellectual, and moral faculties: they are thus unconsciously working out the end of their creation with far more certainty, than if they were fettered by the leading strings of a nursery maid, or placed under the stern supervision of a rigid pedagogue.

This leads us further to observe, that we should endeavour to

Avoid, as far as possible, the Imposition of Tasks.

Nothing should be rendered a task which can be as well or better taught by actual teaching, on the part of the master; or which may be acquired by a repetition of voluntary efforts, on the part of the pupil. THE TASK SYSTEM invests learning with unpleasant associations, and renders the acquisition of knowledge a painful and soul-debasing infliction, instead of a healthful and invigorating exercise for the faculties. These inflictions are remembered by us to the latest hour of our existence. On this subject Locke observes: "None of the things they are to learn should ever be made a burden to them, or imposed on them as a task. Whatever is so proposed, presently becomes irksome: the mind takes an aversion to it, though before it were a thing of delight or indifference. Let a child be but ordered to whip his top at a certain time of the day, whether he has or has not a mind to it; let this be but required of him as a task, wherein he must spend so many hours morning and afternoon, and see whether he will not soon be weary of any play at this rate. Is it not so with grown men? What they do cheerfully of themselves, do they not presently grow sick of, and can no more endure, as soon as they find it is expected of them as a task? Children have as much a mind to show that they are free, that their own good actions come from themselves, that they are absolute and independent, as any of the proudest of you grown men, think of them as you please."

Let us now consider the subject of

School Discipline.

We have stated, as a corollary to our general axiom, that a teacher should govern his pupils by the principle of love rather than that of fear.

The great ruling principle in a school should be love. As a first great step to the establishment of discipline, the master should really love his pupils. Love them! Can the genteel well-dressed teacher love those little ragged vagabond-looking boys, gathered from all the filthy streets and alleys of this crowded city? Love them! Why not? — the most dirty of them all has an immortal and accountable soul, capable of comprehending the works of his Creator. Love them! The Christian teacher must love them, — Jesus died for them, not less than for the offspring of the rich; and it was respecting such children that He said — "Suffer little children to come unto me and forbid them not, for of such is the kingdom of heaven." Now as love always begets love, if the master really loves his pupils, they in return will love him. But if they love their master, they will also endeavour to please him, and to avoid doing anything which is calculated to give him pain. In this way the MASTER'S WILL becomes the RULE of the school; and as children necessarily imitate those whom they love and respect, the MASTER'S CHARACTER becomes the LAW of the school. Even some of our domesticated animals are best governed by kindness. In the government of a school the greatest of all ends is to lead the children to love what is good and hate what is evil, — to follow virtue and shun vice.

The principle of love should pervade the whole school, and the teacher should embrace every opportunity for cultivating the benevolent affections of the children, by acts of kindness and practical lessons of love. Love, like the light of heaven, irradiates and beautifies whatever it touches; fear, like darkness, invests everything with gloom. Love one another is the precept of the

Great Teacher. Love is the most powerful principle in our nature,—it reigns in heaven, for God is love,—it would change hell into heaven, and earth into a primeval paradise. If this principle were fully developed in a school, the child would perform his duty for the love of it, and not from the fear of punishment or the hope of reward.

Fear should never be a ruling principle in a school. No school can be in a healthy condition where the children are governed mainly by the fear of punishment. Fear is an enfeebling passion,—it paralyses the intellect,—it makes boys deceitful, slavish, and hypocritical,—it is the last and lowest motive which can actuate a human being for good. The prison and the gallows are made to frighten wretches, sunk to the lowest depths of moral degradation, from the commission of crime. Punishments may check the progress of vice, but they cannot foster the principle of virtue. Capital punishments, especially when they are numerous and unmerited, betoken a disastrous condition of a state,—they are frequently the hideous forerunners of anarchy, or the fearful epilogues of some national tragedy. So, in like manner, the prevalence of punishments, or a slavish dread of the master, in a school, is a sure indication of mismanagement and instability. That unnatural stillness in a school, which proceeds from fear, is like the deceitful calm which presages the outbreak of the tempest; without the warning of a moment, the pent-up passions may burst away the barriers by which they are restrained.

Many teachers, especially of the old school, have an unfortunate love of despotic authority,—their birch is their sceptre, and their antiquated stool is their throne. This mischievous propensity, no doubt, in a great measure proceeds from the circumstance that it is easier to *command* than to *persuade*, and that it is less troublesome to maintain order in a school by the terror of the *rod* than by the force of reason and *moral suasion.* But if teachers would give only half the attention to the *prevention* of faults that they at present give to the *punishment* of them, the labour of teaching would not only be rendered more pleasant, but also, in the long run, more easy. As prevention is always better than cure, so we should especially look to the causes of disorder, and the best means of avoiding them. The course of a stream is best changed by cutting off the fountain : in like manner the current of disorder is most effectually stayed by drying up its sources. Harsh modes of discipline are necessarily associated with unnatural modes of instruction.

If kindness, moral suasion, and the inculcation of religious principle, fail in reclaiming a boy, then as a last hope the master must of necessity have recourse to punishment; but even in the act of punishment, the master should show that he is actuated by an earnest love for the transgressor. As crimes, in most cases, bring their own punishment, so youthful offenders may be often left to correct themselves, after having suffered the consequences of their faults. The PUBLIC OPINION of a school, when properly developed, is also a great check to the commission of crime, as well as an important aid in the cultivation of habits of virtue.

The formal rules of a school should be few and well chosen, and their observance should always be promptly enforced. A teacher should never magnify a fault into a crime, or allow the punishment to exceed the offence. As the possession of natural gifts does not merit reward, so the want of them cannot deserve punishment. Talents should not always be the subject of commendation, or dulness the object of censure; for a boy may be dull in spite of his application, while another may possess talents without industry.

XV. *Every subject should be taught thoroughly, at least as far as the nature of the subject and the capabilities of the pupils will allow. They should learn nothing which they may have afterwards to unlearn.*

Strictly speaking, this general principle should have formed a corollary to our twelfth axiom; but with the view of guarding against misapprehension, we here give it as a distinct subject of discussion. No principle of education has been more abused than this; its specious name gives currency to a false coinage.

Perfect knowledge is only a relative term, for, absolutely considered, we can never know anything perfectly; however, we may aim at perfection, although we may not hope to reach it. By teaching a subject thoroughly therefore, we simply mean, that the information which we communicate to our pupils should be complete and exact, as far as it extends, and that we should not rest satisfied until it is fixed in their minds; at the same time, we should not attempt to push our instruction beyond their capabilities, nor deceive ourselves with the idea that we have taught anything thoroughly, which has been merely learnt by rote. The most imperfect and fruitless kind of teaching is that where the master attempts to convey a perfect knowledge of all the parts of a subject, before the faculties of his pupils are prepared for grasping such an amount of knowledge. A little knowledge, fully understood and thoroughly digested, creates intellectual power. The amount of knowledge fixed in the mind is not of so much account, as the ideas which are evolved by the intellectual process of elaboration.

To teach a subject thoroughly, we should teach it from facts and principles, and not from formulæ and rules; *the subject should be learnt gradually*, and its varied aspects should be allowed to unfold themselves, as the intellect of the learner becomes more and more ripened and developed. If we wish to rear a lofty structure, we should look well to the foundations, and the superstructure should be built up gradually, and all its parts be allowed to become duly consolidated by time. We should not aim too much at immediate results, or attempt to crowd the labour of years into a single day. If we demand too much at once of our pupils, we are almost sure to receive from them much less than we might reasonably claim. Whatever a teacher may require his pupils to do, he should see that the thing is done with a suitable degree of finish and exactness; at the same time, he should bear in mind, that the power to do a thing perfectly can only be acquired by repeated efforts. As no man ever yet became learned in any subject by reading one book upon it, so the teacher should not expect his pupils to learn any department of a subject thoroughly, until he has directed their minds to it again and again, giving them at each recurrence more and more enlarged views of it. Owing to the inseparable connection subsisting between the different branches of a subject, our knowledge of it must be comprehensive, before it can become exact in all its details,—the outline of the subject must be first rough hewn, before the delicate touches of finish can be applied to it. Faraday, it is said, began the study of chemistry by reading Blair's catechism; and Newton's first book of mathematics was Barrow's easy course of geometry.

One of the best means of teaching a subject thoroughly is the

Reproduction of Lessons.

The ideas which we convey to a child are of little importance, compared with the benefits arising from the vigorous exercise of his powers in reproducing, arranging, or combining these ideas. The knowledge which we convey to our pupils, is the ore thrown into the crucible; but the knowledge which we draw from them is the gold after it has been elaborated and refined.

Reading, says Bacon, makes a full man, conversation a ready man, and writing an exact man. In order to give children a readiness of expression, they should be accustomed to relate, in their own language, whatever they may have seen, read, or heard; this will also induce habits of attention and reflection, and will show them how the ideas of others may really become their own. This may be made one of our first lessons in language. But one of the highest forms of instruction, in an elementary school, is to require the pupils to reproduce, in *writing*, the lessons which may have been read by themselves in a class book, or which may have been given to them orally by the master. This exercise not only thoroughly fixes the subject in the mind of the pupil, but, if properly carried out, forms, at the same time, one of the best lessons in spelling, penmanship, and composition. With the view of sustaining a proper tone of mental activity, dispatch, not less than accuracy, should be looked to, in these exercises.

In order to teach general principles thoroughly, we should give

Examples and Applications.

Children, even at an early age, instinctively ask us—What use is that thing ? let us see it in nature. Their minds cannot sufficiently grasp a general proposition, apart from the things to which it applies. This is especially true in relation to all subjects of calculation and science : here the child readily understands the example or the fact, when he has not the slightest comprehension of the rule or the law. In morals, too, the child will readily understand the nature of stealing from the narrative of some juvenile culprit, while he would be perfectly mystified by some grave and dogmatic disquisition on the principle of honesty. Generally speaking, the most talented boys in a school will not give an earnest attention to a subject, until they have been shown its utility, that is, until they have been shown some of its applications ; such boys will not take everything on the mere authority of their master, especially if the thing is within the range of their comprehension,—they must see and understand the matter for themselves.

Without underrating or evading the difficulties of the subject, our explanations should be clear and simple. We should avoid a slavish use of text-books.

The teacher should constantly bear in mind, that what is perfectly easy to him may be really very difficult to his pupils ; so that, after all he may have done to render a subject clear and simple, his pupils may find it difficult enough for their comprehension. It is a mistake, therefore, for a teacher to tell his pupils that he has made a subject perfectly easy, thereby intimating that he neither appreciates their efforts, not expects them to apply themselves vigorously to the subject. If a teacher cannot give a clear exposition of a subject, he had better leave the matter in the hands of his pupils; a complex or learned exposition is often productive of irremediable evils. The system of Jacotot, which requires the pupil to learn every subject, as well as every branch of a subject, thoroughly before he leaves it, has been carried to a ridiculous extreme by many educators. According to them, *the easiest way* of learning a subject is *not the best way;* for the main business of education is not so much to infuse knowledge as to develope power. The fallacy of this system is at once shown by the fact, that it does not answer the end which it professes to accomplish; for we hold it to be a well established law of our intellectual nature, that the faculties are best cultivated by those exercises which are apportioned to their strength, and not by straining them to their utmost tension. If a subject, or any particular department of a subject, is taught thoroughly, that is, from facts and principles, and not by rote, it is impossible to simplify it too much, or to impair its efficiency as an instrument of intellectual culture. The good teacher will constantly endeavour to lead his pupils in the ROYAL ROAD TO LEARNING,—that is to say, he will try to make the road easy and pleasant,—he will cut off its tortuous windings, macadamise it, and remove all unnecessary obstacles,—he will not create difficulties for the mere sake of trying the strength of his pupils, nor tax their endurance for the purpose of inculcating patience and humility. The little, pedantic mind delights itself in trifling with difficulties, and in making difficulties of trifles; the superior mind invests every subject with its own comprehensiveness and logical simplicity. A good teacher never darkens counsel by words, or obtrudes the intricacies of a subject for the purpose of exhibiting his own power.

Why has mathematics hitherto been considered too difficult for ordinary boys to understand? Simply because some *Pons Asinorum* is thrown in their way at an early stage of their progress,—because abstract propositions are taught apart from their application; and because in place of having to learn the simple fundamental laws of quantity, the boy is required to deal with symbols involved with roots upon roots and operations within operations. You may as well teach boys history from Lingard, grammar from Horne Tooke, or drawing from the cartoons of Raphael, as attempt to teach them geometry from Euclid, or arithmetic and algebra from some learned work, which professes to be at once a class book of the university and a manual of the schoolroom.

No man will teach a subject thoroughly if he restricts himself to the use of a particular class book, more especially if it be a so-called perfect class book, for a complete work upon any subject is certainly not the best book to begin with. Alas for education! if ever the examinations of our schools and training colleges should be based upon an invariable order of text-books. Under such an arrangement, education would become a recognised system of cramming,—a prescribed amount of knowledge would be got up, no matter by what means, provided the end should be attained. We hold that examinations should test the development of power, rather than the acquisition of knowledge; but such a plan of examination would ignore this development. The mind filled with knowledge in this way, has been compared to a well-filled granary, but bears no resemblance to the fruitful field which multiplies a hundred-fold that which is thrown upon it.

This overweening attachment to text-books, and to a so-called thorough education, leads to *the neglect of general knowledge* as well as of the development of power. Its tendency is to confine general education within very narrow limits, and to restrict elementary instruction to the mere rudiments of knowledge.* It gives us the dry bones of the body of education, without the flesh, and the warm blood, and the vital principle—the principle of intellectual and moral life, of growth and development. Instead of cramming his pupils with all the minute details of a subject, the truly methodical teacher will rather seek to develope in them a power of working out the details of a subject for themselves; he has a far sublimer object in view than the slavish adhesion to the cut and dried forms of a text-book; he may not teach any particular science thoroughly in all its technical details, but he seeks to effect a far higher end, to develope in them that power, which may, at some future period, not merely enable them to *know* a science, but to *create* a science. The drudgery connected with the details of some departments of knowledge, often exercises an unhealthy influence upon the mind; for example, the committing to memory long catalogues of words, the exact dates of historical events, the lengths and breadths of countries, &c., tends to stultify the intellect of the pupil, and to withdraw him from the contemplation of more interesting facts and principles.

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* In this respect we are certainly much in advance of our American brethren.

It must, however, be admitted that if a boy is to remain only a short period at school, he had better learn a little well, than a great deal badly: the first rudiments of knowledge, comprising reading, writing, and arithmetic, should above all things be fairly learnt by him before he leaves school; for a knowledge of these first rudiments becomes to him the great instrument of future development and acquisition.

On the injudicious use of books, Woodbridge observes:—

"It is of the highest importance to conduct the pupil in such a manner that he will not afterwards be contented without a thorough knowledge of everything within his reach. It is in this view important not to allow him to devote too much of his time to mere reading. It is easy to read and to amuse ourselves in this manner without understanding thoroughly what we read. There is a constant inducement to seek that occupation and interest in running over a number of books which should be found in examining deeply every subject which is presented. Such reading is the most certain means of forming superficial students and superficial thinkers. It produces a disgust for study, and renders the pupil incapable of that continued and fixed attention which is necessary to success in more than one branch of knowledge; often in the course of reading the pupil learns superficially those facts which form the most interesting parts of his lessons, his interest in them is destroyed, and he no longer pays the attention necessary to learn the facts he has anticipated in connection with the principles they illustrate. If the books are not written in the spirit of the method adopted by the teacher, as is frequently the case, they will produce confusion in his mind, and impair his confidence in his guide: Fellenberg therefore believes that this taste should not be too much encouraged, and that, in a perfect system of education, there should in fact be little time allowed for reading. There should be such ample provision both for instruction and amusement, adapted to the capacity and taste of the pupil, that it shall be (to a great extent) unnecessary either for the one or the other."

One of the most obvious, and probably one of the most simple means of teaching a subject thoroughly, is the

Repetition or Reiteration of Lessons.

Repetition is said to be the main-spring of instruction; but we have reason to believe that the principle has seldom been applied, in elementary schools, in its most legitimate and most advantageous form. On this subject Miss Edgeworth observes: —

"Repetition makes all operations easy; even the fatigue of thinking diminishes by habit. That we may not increase the labour of the mind unseasonably, we should watch for the moment when habit has made one lesson easy, and then we may go forward a new step. In teaching the children at the House of Industry at Munich to spin, Count Rumford wisely ordered that they should be made perfect in one motion before any other was shown to them: at first they were allowed only to move the wheel by the treadle with their feet; when, after sufficient practice, the foot became perfect in its lesson, the hands were set to work, and the children were allowed to begin to spin with coarse materials. It is said these children made remarkably good spinners. Madame de Genlis applied the same principle in teaching Adela to play upon the harp.

"In the first attempts to learn any new bodily exercise, as fencing or dancing, persons are not certain what muscles they must use, and what may be left at rest: they generally employ those of which they have the most ready command, but these may not already be the muscles which are really wanted in the new operation. The simplest thing appears difficult till by practice we have associated the various slight motions which ought to be combined; we feel that from want of use our motions are not obedient to our will, and to supply this defect we exert more strength and activity than is requisite. 'It does not require strength; you need not use so much force; you need not take so much pains;' we frequently say to those who are making the first painful, awkward attempts at some simple operation. Can anything appear more easy than knitting, when we look at the dexterous rapid motions of an experienced practitioner? but let a gentleman take up a lady's knitting needles, and knitting appears to him, and to all the spectators, one of the most laborious and difficult operations imaginable. A lady who is learning to work with a tambour needle puts her head down close to the tambour frame, the colour comes into her face, she strains her eyes, all her faculties are exerted, and perhaps she works at the rate of three links a minute. A week afterwards, probably, practice has made the work perfectly easy; the same lady goes rapidly on with her work; she can talk and laugh, and perhaps even think, whilst she works; she has now discovered that a number of the motions, and a great portion of that action which she thought necessary to this mighty operation, may be advantageously spared.

"In a similar manner, in the exercise of our minds upon subjects that are new to us, we generally exert more effort than is necessary or serviceable, and we consequently soon fatigue ourselves without any advantage. Children, to whom many subjects are new, are often fatigued by these overstrained and misplaced efforts. In these circumstances a tutor should relieve the attention by introducing indifferent subjects of conversation; he can, by showing no anxiety himself, either in his manner or countenance, relieve his pupils from any apprehension of his displeasure, or of his contempt; he can represent that the object before them is not a matter of life and death; that if the child does not succeed in the first trials he will not be disgraced in the opinion of any of his friends; that by perseverance he will certainly conquer the difficulty; that it is of little consequence whether he understand the thing in question to-day or to-morrow: these considerations will calm the over-anxious pupil's agitation, and whether he succeed or not, he will not suffer such a degree of pain as to disgust him in his first attempts."

When a lesson is repeated, it should be done with the view of making the child thoroughly aquainted with the subject-matter; but repetitions are given chiefly to load the memory with words, without any regard to the enlightenment of the reason. If the pupils do not thoroughly comprehend a lesson which has been given to them, the teacher, in going over it for the second time, should adopt some fresh modes of illustrating or demonstrating, as the case may require, the leading ideas contained in it. By this means the monotony of repetition will be avoided, and a new aspect will be given to the subject, which will be highly instructive to their minds.

Miss Edgeworth then goes on to observe:—

"We have said that a preceptor, in his first lessons on any new subject, must submit to the drudgery of repeating his terms and his reasoning, until these are sufficiently familiar to his pupils. He must, however, proportion the number of his repetitions to the temper and habits of his pupils, else he will weary instead of strengthen the attention. When a thing is clear, let him never try to make it clearer; when a thing is understood, not a word more of exemplification should be added. To mark precisely the moment when the pupil understands what is said,—the moment when he is master of the necessary ideas, and, consequently, the moment when repetition should cease, is, perhaps, the most difficult thing in the art of teaching. The countenance, the eye, the voice and manner of the pupil, mark this instant to an observant preceptor; but a preceptor who is absorbed in his own ideas, will never think of looking in his pupil's face; he will go on with his routine of explanation, whilst his once lively, attentive pupil exhibits opposite to him the picture of stupified fatigue. Quick, intelligent children, who have frequently found that lessons are reiterated by a patient but injudicious tutor, will learn a careless mode of listening at intervals; they will say to themselves, 'Oh, I shall hear this again!' And if any stray thought comes across their minds, they will not scruple to amuse themselves, and will afterwards ask for a repetition of the words or ideas which they missed during the excursion of fancy. When they hear the warning advertisement of 'certainly for the last time this season;' they will deem it time enough to attend to the performance. To cure them of this presumption in favour of our patience, and of their own superlative quickness, we should press that quickness to its utmost speed. Whenever we call for their attention, let it be on subjects highly interesting or amusing, and let us give them but just sufficient time with their fullest exertion to catch our words and ideas. As these quick gentlemen are proud of their rapidity of apprehension, this method will probably succeed; they will dread the disgrace of not understanding what is said, and they will feel that they cannot understand unless they exert prompt, vigorous, and unremitted attention."

XVI. *In all our instruction we should attend to the cultivation of habits.*

Habits, according to the old adage, become a second nature,—they render labour easy, and the performance of duty a pleasure,—they fortify us against the contagion of bad example, and shield us from the force of sudden temptation. Intellectual habits are not less essential to the man than those habits which have a relation to conduct: thus, for instance, the habit of working out results from first principles and not by rules, exercises a most salutary influence in the development of the faculties of children.

Habits of thought, as well as habits of conduct, can be established only by time, repetition, and practice. Useful habits are formed gradually,—a little thing done well leads the way to the performance of a greater; and what appears hard to-day may, by repeated trials, become perfectly easy to-morrow. As right habits can only be formed gradually, we should never exact too much from a child. Habits of attention, reflection, application, industry, virtue, and piety are better inculcated by example, than by precept; for children are peculiarly imitative beings: if the parents of a child, for instance, are always employed, the child cannot long remain idle,—he will soon acquire the habit of industry; and so on to other cases. Well-timed practical examples or illustrations will have far more influence in developing the character of children than abstract rules or precepts. And as no proposition should be given without a proof, so no duty should be exacted without a reason.

"Virtues and vices (says Locke) can by no words be so plainly set before their understandings, as the actions of other men will show them, when you direct their observation, and bid them view this or that good or bad quality in their practice. And the beauty and uncomeliness of many things, in good or ill breeding, will be better learnt, and make deeper impressions on them, in the examples of others, than from any rule or instructions that can be given about them. And what ill they either overlook, or indulge in themselves, they cannot but dislike and be ashamed of when it is set before them in another.

"And here give me leave to take notice of one thing I think a fault in the ordinary method of education; and that is, the charging of children's memories, upon all occasions, with rules and precepts, which they often do not understand, and are constantly as soon forgotten as given. If it be some action you would have done, or done otherwise, whenever they forget or do it awkwardly, make them do it over and over again, till they are perfect: whereby you will get these two advantages. First, to see whether it be an action they can do, or is fit to be expected of them. For sometimes children are bid to do things, which upon trial they are found not able to do; and had need be taught and exercised in before they are required to do them. Secondly, another thing got by it will be this, that by repeating the same action, till it be grown habitual in them, the performance will not depend on memory, or reflection, the concomitant of prudence and age, and not of childhood: but will be natural in them. Thus, bowing to a gentleman when he salutes him, and looking in his face when he speaks to him, is by constant use as natural to a well-bred man as breathing; it requires no thought, no reflection. Having this way cured in your child any fault, it is cured for ever: and thus, one by one, you may weed them out all, and plant what habits you please.

"I have seen parents so heap rules on their children, that it was impossible for the poor little ones to remember a tenth part of them, much less to observe them. However, they were either by words or blows corrected for the breach of those multiplied and often very impertinent precepts. Whence it naturally followed, that the children minded not what was said to them; when it was evident to them, that no attention they were capable of, was sufficient to preserve them from transgression, and the rebukes which followed it.

"Let therefore your rules to your son be as few as possible, and rather fewer than more than seem absolutely necessary. For if you burden him with many rules, one of these two things must necessarily follow, that either he must be very often punished, which will be of ill consequence, by making punishment too frequent and familiar; or else you must let the transgressions of some of your rules go unpunished, whereby they will of course grow contemptible, and your authority become cheap to him. Make but few laws, but see they be well observed, when once made. Few years require but few laws, and as his age increases, when one rule is by practice well established, you may add another.

"But pray remember children are not to be taught by rules; which will be always slipping out of their memories. What you think necessary for them to do, settle in them by an indispensable practice, as often as the occasion returns; and, if it be possible, make occasions. This will beget habits in them, which, being once established, operate of themselves, easily and naturally, without the assistance of the memory. But here let me give two cautions:—

"1. The one is, that you keep them to the practice of what you would have grow into a habit in them, by kind words and gentle admonitions, rather as minding them of what they forget, than by harsh rebukes and chiding as if they were wilfully guilty.

"2. Another thing you are to take care of, is not to endeavour to settle too many habits at once, lest by a variety you confound them, and so perfect none. When constant custom has made any one thing easy and natural to them, and they practise it without reflection, you may then go on to another.

"This method of teaching children by a repeated practice, and the same action done over and over again, under the eye and direction of the tutor, till they have got the habit of doing it well, and not by relying on rules trusted to their memories, has so many advantages, which way soever we consider it, that I cannot but wonder (if ill customs could be wondered at in anything) how it could possibly be so much neglected. I shall name one more that comes now in my way. By this method we shall see, whether what is required of him be adapted to his capacity, and any way suited to the child's natural genius and constitution: for that too must be considered in a right education."

The habits of attention and concentration are the great main-springs of education.

As we have already observed, the great secret in securing the attention of children is to interest them ; and the habit of attention is cultivated by keeping the faculty in a state of vigorous activity, during the whole course of our instruction. The habits of listlessness and inattention are engendered by injudicious or inappropriate plans of teaching. The habit of directing the undivided force of the faculties to a given subject is the great main-spring of self-education. But this habit, in its fullest vigour, is rarely acquired in early life; notwithstanding, the teacher should be prepared to avail himself of all the occasions most favourable for its cultivation. The principle of emulation and a judicious system of rewards are two of our most powerful supplemental aids in the cultivation of this habit.

The habit of observation should be specially cultivated.

Object lessons are highly calculated to foster the habit of observation. Children should be accustomed to examine, analyse, and inspect every object of interest around them: the flowers and minerals by the wayside, the animals of the fields, the warblers of the forest, the various household utensils, &c., all present us with excellent subjects for exercising the observing faculties. The habit of observing the structure, uses, and properties of familiar things, prepares the mind for entering upon a higher course of scientific inquiry.

PART II.

ON THE CULTIVATION OF THE INTELLECTUAL AND MORAL FACULTIES.

CHAP. I.

PRELIMINARY NOTIONS.—IMPORTANCE OF PSYCHOLOGICAL ANALYSIS IN RELATION TO TEACHING, ETC.

No class of men require a knowledge of intellectual and moral philosophy more than teachers: self-knowledge is valuable to all, but it is especially valuable to them. Self-knowledge, in its fullest acceptation, requires that we should know ourselves in relation to the three states of our existence,—the past, the present, and the future: consciousness tells us what *we are*, remembrance informs us what *we have been*, and reason, by combining the facts of our past and present existence, enables us to anticipate what *we shall be*. But self-knowledge, in this comprehensive sense, is rarely found amongst teachers: we seem to regard our minds as little as we do our watches,—we look at the dial plate, but heed not the internal machinery—the springs, the regulators, or the beautiful combinations of wheels within wheels by which the results are produced. A man, who is entrusted with the direction of a machine, should surely be acquainted with the principles of its construction, Now the teacher has to regulate and develop the faculties of a human soul,—his mind has to act upon another mind so as to give a right tone and direction to its development. Here mind is the agent which acts, and mind is the object acted upon. The teacher should, therefore, study the philosophy of our intellectual and moral nature.

The most wonderful work of God is the human soul, for it has been created after His own image; and the laws which govern its action and development demand the most patient study. The highest of all intellectual efforts, is that of the mind engaged in the study of itself,—the principle of thought engaged in the investigation of the laws and processes of thought,—the intellectual vision turned inwardly upon itself. Here we must arrest the current of thought, in order to determine the modes and conditions of its action and development.

The child is the man in embryo: the child has the same faculties as the man, but they are in a different state of development. In order that a man may teach children, he should thoroughly sympathise with them,—he should realise their habits of thought and action, peculiar tastes and modes of self-development; he should frequently, in imagination, conceive himself to be a little child, and recall to himself all that he thought and felt when he was a little child; so that he may be able to tell what effect any particular form of instruction or mode of training will have upon them. A teacher, therefore, should not only know himself as he is, but he should also look back to the early history of his own mind, and analyse the facts of this past existence with the view of determining the causes which had been most operative in stimulating the growth and development of his faculties.

Let us for a moment glance at the panorama of our early years, with the view of realising our thoughts and feelings relative to the educational influences which were brought to bear upon our own intellectual and moral development. This psychological inquiry will bring home to us the momentous fact: that there is not a single act, not a single thought, of our past life, that has not had an influence in fixing our present intellectual and moral condition. What WE ARE is but the last link in a long chain of sequences, extending from childhood to youth, from youth to manhood, from manhood to age; and what WE SHALL BE will only be an extension of the links of this chain of sequences.

A glance at our childhood and early youth.

Let us in imagination live our lives over again, with the view of realising the different stages of our intellectual and moral development, and of exposing the errors of certain systems of education. This will not be difficult if we confine ourselves to a simple statement of facts, without refining too much upon the use of phrases, or mixing up our apprehensions with recondite theories relative to mental phenomena.

We all remember,—how, in our early childhood, we loved whatever afforded us pleasure, and hated whatever gave us pain,—how we loved the beautiful and the good and dreaded what was ugly and bad,—what horror a butcher or a butcher's shop excited, and how visions of blood and cruelty haunted us in our dreams,—what pleasure we derived from every strange scene and every new toy,—how we dreaded our hard task-masters, and how delighted we were when we were permitted to acquire knowledge in our own way.

We all remember,—how, in our boyish days, we made whistles and pop-guns, suckers and slings,—how in our games we mimicked the ways and doings of man in the great world,—how we loved to wander in the fields and pluck the flowers and listen to nature's wild music,—how we distinguished birds one from another, or different animals one from another, — how we loved to gaze upon the sea and the sky, or to penetrate the depths of the trackless forest, or to climb the rugged cliff,—how the contemplation of nature filled our little souls with ecstasy, and how we wondered if other people felt the same emotions that the words God, Eternity, Immensity, &c., excited in our minds,—how imagination conjured up fictitious scenes, and peopled them with the creations of our own brain,—how we hated the drudgery of tasks, because we could not understand them, and with what pleasure we turned from them to read stories of animals or tales about children,—how readily we believed in everything that was told us, and how our religion intermingled itself with superstitious notions,—how we told ghost stories, in the long winter nights, to our playfellows sitting round the fire,—how we wished that our school days were over, that we might think and read as our own instincts directed us, without being under the iron rule of hard masters,—with what pleasure we anticipated the approach of holidays and periods of festivities, and how we looked to the future, when we should be without pain or anxiety, and when we should enjoy the full exercise of our faculties.

We all remember—when our school days were over, and when we fairly commenced the process of self-development—with what avidity we read books that suited our capacities and tastes, and what pleasure the exercise of our intellectual faculties afforded us,—how the dogmas of our school learning were forgotten or disregarded,—how we studied men and things for ourselves, and how our own faculties and feelings became distinct objects of contemplation,—how our past joys and sorrows, thoughts and emotions, passed in review before us, and how hope and high resolve shed a halo over the future, and urged us on in the career of life.

And now, when the fairy existence of early youth is past, what remains for our matured age ? The illusions of hope have melted away like the unsubstantial visions of the night,—life has lost its greatest charm, and the stern realities of existence meet us on every side,—most of the gay friends of our childhood are in the cold grave, and the voices that once charmed us, as with the sweetest melody, are silent and still. What remains for us? Action ! usefulness ! and the prospect of meeting our lost friends in a better state of existence !

This review of the facts of our past existence supplies us with valuable suggestions relative to the work of elementary education.

A cursory view of our intellectual and moral faculties as regards their mode of development.

Man is a thinking and a responsible being; hence we speak of our intellectual and moral nature,—of the powers of intellect, which have respect to knowledge, and of the moral powers, which have respect to conduct. We think, feel, and act; we have thoughts and emotions, and we have also the power of controlling our thoughts and emotions. Hence our mental phenomena may be divided into three classes: 1. Simple intellect, comprehending those faculties by which we perceive, remember, compare, conceive, imagine, and reason. 2. Emotions, usually called passions or affections; these may be either passive or active; passive emotions simply affect us with pleasure or pain; active emotions affect our conduct, and they may be either right or wrong, virtuous or vicious. 3. Over all these powers and emotions is placed the principle of self-control,—the voluntary principle—THE WILL, which constitutes man a voluntary being, and which, acting in conjunction with REASON and the power of CONSCIENCE—that inherent instinctive sense of right and wrong—also constitutes him a moral and responsible agent.

Let us now endeavour to trace the successive stages of our intellectual and moral development.

External objects produce impressions upon our senses, which impressions we call *sensations;* we become *conscious* of these sensations, and we *perceive* the objects which produce them; hence we regard sensation and perception as belonging to the first stage of our mental development. Sensation is the effect which external objects have upon our senses; perception is an act of the mind, and hence we speak of the FACULTY OF PERCEPTION.* But a sensation may take place without being followed by its corresponding perception ; thus for example an object may be placed before our organs of vision without being perceived by us; in fact we must give our *attention* to a thing before we can have a full perception of it; hence we recognise the existence of that voluntary power of the mind which we call the FACULTY OF ATTENTION. We remember past impressions and perceptions; hence we are said to possess the FACULTY OF MEMORY. We recall at our will past impressions and scenes, and conceive them to be, as it were, placed before us with all the vividness of the original impressions ; hence we are said to possess the faculty of CONCEPTION. By this faculty we make the idea — the conception — of an object a distinct subject of consciousness and contemplation. We not only remember and conceive, but we also *compare* the impressions of objects, whether present or absent, with each other, and thus distinguish them one from another, or from a *judgment* relative to their respective qualities ; hence we are said to possess the faculties of COMPARISON and of PRIMITIVE JUDGMENT; these form the first elements of the process of reasoning. Things are perceived by us under certain relations of place, time, &c.; we *recollect* them in the same order of place, time, &c.; hence we are said to possess the faculty of RECOLLECTION ; which is something more than simple memory, for it involves the faculty of ASSOCIATION. By the faculty of association certain written signs or sounds become suggestive of, or associated with, certain ideas. The *name* of a horse, for example, whether written or spoken, becomes associated with the conception or idea of a horse, so that the presence of the one suggests that of the other. The gift of language, or as we might say, the FACULTY OF LANGUAGE, not less than reason or the moral sense, distinguishes man from the lower animals. By means of language, that wonderful symbol of thought, we hold communion with one another, —we record the results of our experience—our ideas,— and thus the life of a man, in a certain sense, is not bounded by his own individual term of existence, but embraces the whole period of the past existence of his species. We *imitate* the sounds which we hear, and copy the forms which we see; hence we are said to possess the faculty of IMITATION. We not only believe in the facts which we derive from perception and observation, but we also readily accept the facts communicated to us by others; hence we are said to have an instinctive belief in testimony; hence that remarkable aptitude which children show for receiving instruction, and the unreasoning trust which they repose in the statements of their parents and teachers. This may be not inappropriately called the FACULTY OF LEARNING.

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* Brown and his followers object to the use of the word faculty or power, as applied to these distinct acts of the mind: they consider that the use of such phraseology ascribes distinct functions to the mind, somewhat after the manner in which we ascribe distinct senses to the body. Now we take the broad facts of mental phenomena, as they are received and understood by all; and by the word faculty, as here used, we simply mean a certain distinct mental act, or it may be, a certain distinct state of the mind. Some very substantial reasons must be given in order to change the phraseology of a people.

Let us now trace some of the earliest developments of imagination, abstraction, and reason.

We *imagine* things to exist, and invest them with various imaginary qualities. With the aid of visible representations, we form an idea of absent objects and things,—a small picture enables us to realise the idea of a mountain stream, or of some beautiful natural scene: hence we are said to possess the faculty of IDEALITY, which is obviously nearly allied to that of imagination.

We OBSERVE the relation between events:—a stroke upon the table, for example, is followed by a sound; the stroke is recognised as the CAUSE, and the sound as the EFFECT; the stroke is repeated, and the same sound is produced, and we instinctively believe that the same effect will always be followed by the operation of the same cause.

We see a series of objects having the same colour;—they may be different in form, taste, &c., but they have the same colour: we form a conception of that colour, apart from the other properties of the bodies,—that is to say, we form an abstract idea of it.

We see a lot of balls,—they may be different in colour; some may be rough, others may be smooth, but they have all the same form—they are all balls; we realise a conception of this form apart from the other properties of the bodies. A particular figure formed by three straight lines, and therefore containing three angles, is called a triangle; but we may draw another figure bounded by three straight lines, which shall differ very much from the first in the absolute and the relative lengths of the sides; yet still we call this figure a triangle, for it is bounded by three sides and contains three angles: hence we form the abstract idea of a triangle, corresponding to the definition which limits or defines this species of form. And so on to other cases of geometrical form and magnitude. In like manner we arrive at a knowledge of the various properties of bodies.

We see a lot of balls,—we count them by ones,—they make up a certain number; but they may be grouped in different ways, and the total number will be made up of the number in the different groups put together; thus, for example, if there are five balls, we may put them into two groups, one of which shall contain three balls and the other two; then we arrive at the fact that three balls and two balls make five balls; but we may count, in the same manner, with buttons, or with any other objects; hence we form the abstract conception of numbers and the properties of numbers, without regard to the particular objects which represent them, whether they be balls, or buttons, or cubes, or anything else. The results thus attained, expressed in language, become established truths or propositions, and we remember them as such.

In all these cases we exercise the faculty of ABSTRACTION, which at the same time involves those of CLASSIFICATION and GENERALISATION. By the faculty of abstraction, therefore, we arrange objects into classes, genera, and species. Thus we observe that some objects have certain common properties, by which we distinguish them from other objects; hence we classify them and call them by some name indicative of the class: thus we soon distinguish a horse from a cow, &c.; hence also we generalise, that is to say, we take a comprehensive view of a multifarious collection of facts, by selecting one which is common to them all.

Co-existent with this stage of intellectual development certain appetites and passions exhibit themselves. The taste of a sweetmeat affords us PLEASURE, the taste of a drug is UNPLEASANT; we LOVE and DESIRE the one, while we DISLIKE and AVOID the other. Some sensations and ideas are accompanied with pain, others with pleasure; we love the person that is kind to us, because his kindness affords us pleasure, and we HATE and FEAR the person that treats us with cruelty, because his cruelty gives us pain.

The sentiment of taste — the sense of the sublime and beautiful — early develops itself. We admire a beautiful object, because the sight of it affords us pleasure, — the flowers with their varied forms, and colours and scents, — the green fields and woods, — the bright sun, lighting up the wide earth with life and joy, — the silver moon, as she sheds her soft and balmy light over the slumbering world,—the stars, as they twinkle in the depths of the azure canopy of night, — all are beautiful to us — all are charming to us — because they all awaken within us the sentiments of love and admiration.

But the contemplation of the sublime, not less than the beautiful, affords us pleasure: the snow-clad mountain, — the deep ravine, — the boundless expanse of field and forest, — the vast ocean as it swells and foams and responds to the moaning winds, — the rolling thunder and the flashing lightning, — all are sublime — all fill our souls with the sentiments of AWE, VENERATION, and WONDER, and impress us with the ideas of vastness, power, immensity, and infinitude. Above all, and over all, we adore and love the Great God, who made the world and all its fulness, and enthroned Himself amid its riches and goodness.

We love knowledge in all its forms, because its acquisition affords us pleasure. Not satisfied with what we already know, we seek to know more ; hence that insatiable appetite for knowledge—that ceaseless CURIOSITY, which is ever craving for knowledge, but is never satisfied, and which forms one of the most remarkable features of the infant mind. We love approbation, and the consciousness of mental power affords us pleasure. We eagerly strive with our companions in the race of improvement; hence we are said to possess the principle of EMULATION.

We also soon distinguish between what is good or bad in conduct: the SENSE OF THE BEAUTIFUL is closely related to and connected with the MORAL SENSE, or that faculty whereby we distinguish what is good and beautiful, and therefore praise-worthy in our actions, from what is bad and displeasing, and therefore blameworthy. The inherent conviction of our moral responsibility leads us to follow the one and avoid the other. We see that self-indulgence, if carried too far, is injurious to ourselves and often detrimental to the happiness of others; we hence recognise two distinct principles, or rather two distinct classes of emotions in our nature,—the one class has been called the SELFISH EMOTIONS, the other the BENEVOLENT EMOTIONS; the one seeks the gratification of self, the other seeks to promote the happiness of others. The principle of SYMPATHY leads us to adopt the golden rule of conduct, viz., to do unto others as we would that they should do unto us. We PITY those that are in pain or distress,—we sympathise with them, that is, we in a certain sense make their misery our own, and thus we are led to relieve them. But our instincts are not all for good: we suffer injuries or injustice from others; those injuries excite within us the emotions of HATRED and REVENGE, and other MALEVOLENT PASSIONS; but we cannot indulge these passions without causing misery to ourselves as well as to others; hence arises the necessity of SELF-CONTROL. We tell LIES—FALSEHOODS—to screen ourselves from the consequences of our follies, or it may be to gratify our VANITY; but our conscience raises its voice against the violation of TRUTH. We take the property of others, or seek to indulge ourselves at the expense of others; but the golden rule tells us that theft, injustice, &c., are wrong, and that honesty, justice, &c., are right. The love of approbation frequently engenders VANITY, and the consciousness of power produces PRIDE and CONCEIT. Education stimulates the development of our virtuous emotions, and checks the development of those that are evil. Scripture, the revealed word of God, lends its all-powerful aid to inculcate what is good, and to denounce what is evil. We are there informed, that God is holy as well as good, just as well as merciful; as judge of all the earth, therefore, he will punish the wicked and reward the righteous in the world to come.

Of all our intellectual faculties, imagination, reason, judgment, and invention are the latest in attaining their full growth and development.

Out of our impressions of actual scenes and events, we imagine, or, as it were, create fictitious scenes and events, and invest them with all the vividness and warmth of reality; hence we are said to possess the faculty of IMAGINATION. We separate facts or general principles from each other, and throw them into new combinations with the view of deriving some new result or fact; in this case we are said to exercise the faculty of INVENTION, which is obviously very nearly allied to that of imagination.

We analyse facts, compare them with each other, observe their relations, and deduce from these relations certain general facts or principles; we compare our mental impressions with external things, draw conclusions, and establish certain principles of belief; in all these cases, we are said to exercise the faculty of REASON, or it may be that of JUDGMENT. By reason we investigate truth, and determine the laws of evidence and belief. Reason is the highest faculty of our nature, and admits of an indefinite degree of cultivation.

A more exact analysis of the mind, with a classification of its faculties, is given in Chap. III., Part I., of this work.

CHAP. II.

CULTIVATION OF THE INTELLECTUAL FACULTIES. — CULTIVATION OF THE PERCEPTIVE FACULTIES AND OF THE FACULTIES OF PRIMITIVE JUDGMENT, CONCEPTION, IMITATION, ABSTRACTION, AND LANGUAGE.

OUR first knowledge of the existence and properties of the material world is derived through our senses; hence it follows, that our knowledge of the properties of material bodies is limited by the number and acuteness of our senses. It is generally believed that we have five senses,—sight, hearing, taste, smell, and touch; but to these has been added the sense of muscular effort, or the sense of resistance to muscular action.

Some properties are cognisable by one sense only; but in general our knowledge of the external world is derived from the combined action of several senses. Thus colour can only be known to us by the sense of sight, sound by the sense of hearing, taste by the sense of taste, cold or heat by the sense of feeling, odour by the sense of smell, and weight or force by the sense of muscular effort; but the properties of form, size, number and texture, are cognisable by at least two of our senses, viz., sight and touch; the ideas of number and succession may be conveyed to the mind by any of our senses; thus a succession of sounds, tastes, &c., may impress us with the idea of number as perfectly as a series of objects placed before the eye can do. Our impression of solidity, roughness, or smoothness, is derived from touch combined with muscular action. And so on to other cases.

The first notions derived from our senses, however, seem to be limited and imperfect. Our real knowledge is only acquired by experience, in the course of which, the impressions derived from one sense are used to supply the deficiencies and correct the errors of the impressions derived from another sense, and by the mind acting upon the impressions derived from all the senses. Thus, for example, the primary objects of vision are colour and apparent form; but the result of experience, derived from the sense of touch, &c., enables us to judge of distance and magnitude by our vision. It is well known, that we have no idea of the distance of an object unless we have some knowledge of its magnitude, and *vice versâ.* In like manner we have no idea of the intensity of sounds, unless we have some knowledge of their distance, and *vice versâ.* Experience also enables us to judge of the distance of an object by the degree of its brightness, or by the degree of distinctness of its outline: hence it is that, in a picture, distant objects are drawn faintly and with an indistinctness in the outline of their minute parts. The *apparent* form of a body is often very different from the true idea which we conceive of it; in fact our conception of an object, derived from vision, is as much a matter of judgment as of sensation. We avail ourselves of this principle in perspective drawing, where we diminish the size of the lines representing known objects to convey the idea of distance, and fore-shorten the lines which represent the parts of objects seen obliquely. These observations show, that we have to learn the right use of our senses. It is the business of the teacher to aid nature in accomplishing this end.

On the cultivation of the senses Miss Edgeworth observes:—

"Rousseau has judiciously advised, that the senses of children should be cultivated with the utmost care. In proportion to the distinctness of their perceptions will be the accuracy of their memory, and probably, also, the precision of their judgment. A child who sees imperfectly, cannot reason justly about the objects of sight, because he has not sufficient data. A child who does not hear distinctly, cannot judge well of sounds; and, if we could suppose the sense of touch to be twice as accurate in one child as in another, we might conclude that the judgment of these children must differ in a similar proportion. The defects in organisation are not within the power of the preceptor; but we may observe, that inattention, and want of exercise, are frequently the causes of what are mistaken for natural defects; and, on the contrary, increased attention and cultivation sometimes produce that quickness of eye and ear, and that consequent readiness of judgment, which we are apt to attribute to natural superiority of organisation or capacity."

The cultivation of the senses necessarily includes the cultivation of the faculty of perception. This faculty demands the earliest attention and cultivation; its first development is best attained by directing it to the examination of form and number, and afterwards to the various other properties of bodies. A sufficient time should be allowed the child to *examine* and *observe* the different parts and peculiarities of the object at which he looks; and we should not expect him to give his attention to more than one subject at a time. He should be led to COMPARE one object with another, or it may be different parts of the same object with each other. He should be shown how to direct all his senses to an object with the view of determining all its properties. He will, in the course of this examination, frequently find that he is able to detect the same property by different senses. Thus, for example, the teacher may say to his pupil,—what shape has this object (a ball)? *P.* It is round. *T.* How do you know that it is round? *P.* I *see* that it is round. *T.* Is there no other way by which you can know that it is round? You seem to hesitate, —now take it in your hand and run your fingers over its surface. *P.* I *feel* that it is round. *T.* But your feeling tells of another property which that object has, —what is that property? *P.* It *feels* smooth. *T.* But there is another way by which you know that it is smooth? *P.* It *looks* smooth,—it is glossy or bright. *T.* True—your experience teaches you, that bodies which appear bright or glossy are almost always smooth. Now close your eyes, and take this body in your hands, —can you feel what colour it has? *P.* I cannot *feel* colour. *T.* Now open your eyes, and tell me what colour it has. *P.* I *see* that it is red.

In cultivating the perceptive faculties the teacher should frequently require his pupils to JUDGE of the distance of an object from its apparent size, or from its distinctness of outline, and *vice versâ,* or of the distance of a sound from its intensity, or of the distance of a place by the time which it takes them to walk to it. The eye should be exercised in noting the position of objects with respect to each other, and in comparing the magnitude of the angles formed by lines and planes. They should be accustomed to use the foot rule in measuring the lengths and breadths of different things, and also their distances from one another, so that they may at once be able to verify their JUDGMENTS relative to the sizes of different objects. The weights and capacities of bodies should also be made a subject of observation. In order to give an idea of density, or, the lightness or heaviness of a substance, the attention of the child should be directed to the size of a pound of tea as compared with the size of a pound of sugar, or to the weight of a sovereign as compared with the weight of a shilling.

In all these exercises, the child should be required to express in LANGUAGE the results of his observations or judgments; and wherever it is practicable, he should be required to DRAW the object or objects to which his attention has been directed; nothing tends to cultivate the eye and the hand so much as drawing. Proceeding in this way, the teacher will COMBINE PERCEPTION, OBSERVATION, JUDGMENT, DRAWING, AND LANGUAGE IN THE SAME EXERCISE.

The habit of exact perception and observation will be further cultivated, by directing the attention of the child to various natural phenomena, such as we have described under our general axioms. It is almost unnecessary to say, that music will exercise the same influence in the cultivation of the ear, that drawing does in reference to the eye.

THE CONCEPTIVE FACULTIES should be cultivated at the same time as the perceptive faculties. After the attention of a child has been sufficiently directed to an object, it should be removed from his sight, and then he should be required to describe it in language, or, it may be, by drawing a representation of it. In like manner, after certain operations of numbers have been explained to him, by reference to familiar objects, such as balls or strokes, he should be required to perform, by the ordinary process of mental calculation, similar operations without the aid of such objects. He should also be required to describe, in his own language, particular scenes and events which he may have recently witnessed.

A teacher should address his instruction to the EYE as well as to the EAR. The subject should be illustrated by pictures, drawings, or figures, as the case may require, and new phrases or words should be written in large characters upon the black board. In all cases, the conception of any new thing should be aided by words, by symbols, by figurative representations, or by models.

After all the properties of a body have been examined by the pupils, the names given to these properties should be thoroughly impressed upon their minds. These properties, as we have before remarked, should then be made a subject of comparison or contrast, as the case may be, with the corresponding properties of other bodies; and then the property or properties by which the object, on which the lesson is given, is distinguished from other bodies, should be distinctly pointed out, and the *judgments* thus formed should be expressed in simple and appropriate language. THE USES to which the body is applied should then be exhibited; and the connection between its distinguishing properties and its uses, should be carefully explained and illustrated.

Children like to dwell in the ideal world,—the world of conceptions. The depth and vividness of their conceptions are intensified by the emotions elicited by our lessons. The following subjects of instruction are highly calculated to interest the feelings, and to invigorate the conceptive faculty: zoology, comprehending a description of the habits of the wild animals of the forest; geography, comprehending descriptions of strange and distant lands; mental arithmetic, in which the fundamental operations of numbers are conducted without the aid of symbolical notation; astronomy, describing the revolutions of the vast globes which move through the amplitudes of space; and so on. As an example, let the subject of the lesson be *the form and magnitude of the earth.*

Notes of a Lesson for cultivating the Faculty of Conception. Age of the pupils about seven.

The world is a globe like an orange; the orange is a little globe, but the world is a vast globe many thousands of times larger than the orange. When you look from the top of a high hill, you only see a small portion of the earth's surface; beyond the distant hills and trees, which bound your view, there are hills and trees, and again hills and trees far, far beyond. Navigators have sailed round the earth. The length of a line going round the earth is about 25,000 miles. You cannot tell what a great distance this is, but I shall try to give you some idea of it. You have travelled in a railway train, and you know how fast it moves; well, I once travelled in a fast train from London to York in four hours; now it would take that train constantly going, about three weeks, to go round the earth. Such is the great size of the earth. But the distance round the earth is almost nothing when compared with the celestial spaces. You have seen the evening star (Venus) when the sun is sinking in the western sky;—the sun is seen beside the farm-house, and Venus over the forest, only a few miles from the farm-house; now the real distance between the sun and Venus is upwards of 60 millions of miles, or more than two thousand times the girt (circumference) of our earth. And so on.

In this lesson we shall have cultivated other faculties besides that of conception.

DEFINITIONS OF TERMS should be given, as far as practicable, in connection with the things or properties which are designated by these terms. Thus, for example, if we wish to give a definition of the term *elasticity*, we should take a piece of india-rubber and stretch it out before the pupil, saying to him at the same time,—now I am exerting a pulling force, so as to stretch this long piece of india-rubber; what do you observe in reference to the alteration in its shape? *P.* You have stretched it out,—it is longer than it was at first. *T.* Now I release it,—now the stretching force ceases to act,—what do you now observe? *P.* It has returned to its original shape. *T.* This property is called *elasticity*, and the india-rubber is said to be *elastic.* Now tell me, in your own language, what you mean by the property of elasticity? *P.* That if the body be stretched out, and then let go (released) from the force, it will return to its original shape. *T.* True; but we may express the same thing thus: elasticity is that property whereby a body returns to its original shape after the force which has altered its shape is withdrawn.

DEFINITIONS OF FORM should be given in connection with the actual construction of the figures which we wish to define. As our geometrical definitions and postulates are based upon experience and observation, one of the first steps in mathematical instruction is to show how geometrical figures may be described in accordance with their definitions, and, at the same time, to aid the mind of the pupil in forming general or abstract conceptions of these figures. The best way of showing the *possibility* of drawing a perfect figure, is actually to draw it with a greater or less degree of accuracy, according to the conditions of its abstract definition. Thus, if we wish to give the definition of a circle, we should take a string and describe a circle with it, before the pupil, saying to him at the same time:—the figure bounded by this chalk line is called a circle; the fixed point about which the string revolves is called the centre of the circle; the length of the string, which constantly remains the same, is the *radius;* the chalk line itself, which forms the boundary of the figure, is called the *circumference;* and the line drawn through the centre, meeting the circumference on opposite sides, is called the *diameter.* Now what have you to say about the distance of the circumference of a circle from its centre? *P.* It is always the same. *T.* In other words, you would say, that the radii of a circle are all equal to one another. Now although this circle is not so perfect as it is possible to draw one, yet you can tell me what a perfect circle is. *P.* A circle is a figure bounded by a line which is everywhere at the same distance from a point within it called the centre.

In like manner the pupil should be led to give in his own language the definitions of the terms radius, diameter, circumference, &c. Without materially altering the language employed by the pupil, the teacher may find it desirable to *improve* or *correct* it.

Above all things, children should be accustomed to write their own ideas in their own language. The writing of the contents of a book is better than the study of a whole commentary upon it; and the writing of the subject-matter of a single page, often stimulates the appetite for learning more powerfully than the reading of a whole folio. On this subject Richter observes: "Since writing signifies but the sign of things, and brings us through it to the things themselves, it is a stricter isolator and clearer collector of the ideas than even speech itself. Sound teaches quickly and generally; writing, uninterruptedly and with more accuracy. It is certain that our representation is much more a mental seeing than hearing, and that our metaphors play far more on an instrument of colour than of sound, and therefore writing which lingers under the eyes must assist the formation of ideas to a much greater extent than the rapid flight of sound. The scholar indeed carries it so far, that, when he reflects, he really seems to read a printed page; and when he speaks, to give a little declamation out of a quickly and well written pamphlet. Let the boys write out their own thoughts sooner than copy yours, so that they may learn to exchange the heavy-ringing coin of sound into more convenient paper money. And let them be spared the writing-texts of schoolmasters, containing the praises of industry, of writing, of their master, or of some old prince; in short, subjects about which the teacher can produce nothing better than his pupils. Every representation without some actual object or motive is poison. I cannot understand schoolmasters! Must the man even in childhood preach from the appointed Sunday text, and never choose one for himself from nature's bible? Something similar may be said about the writing of open letters (an unsealed one is almost inevitably half untrue) which the teachers of girls' schools require, in order, say they, to exercise their pupils in epistolary style. A nothing writes to a nothing: the whole affair, undertaken by the desire of the teacher, not of the heart, is a certificate of the death of thoughts, an announcement of the burning of the materials. Happy is it if the commanded volubility of the child, arising from coldness and addressed to emptiness, do not accustom her to insincerity. If letters must be forthcoming, let them be written to some fixed person, about some definite thing. But what need of 'so much ado about nothing,' since — not even excepting political or literary newspapers — nothing can be written so easily as letters on any subject when there is a motive for them, and the mind is fully informed of the matter."

CHAP. III.

CULTIVATION OF THE INTELLECTUAL FACULTIES, CONTINUED. — CULTIVATION OF THE FACULTY OF ATTENTION.

IN all our exercises of the senses, the faculty of ATTENTION should be assiduously cultivated, by all the artifices which we may have within our power. The habit of directing the faculties promptly and intensely to whatever subject comes before them, lays the foundation of the intellectual character. This habit requires careful cultivation: all the pupils should be expected to concentrate the whole of their powers of observation on the subject brought before them; imperfect perception should be carefully guarded against, and erroneous conceptions promptly corrected; no subject should be dismissed until all its legitimate points of interest have been fairly exhausted; and carelessness, lassitude, or indifference should never be permitted for one moment to exist. Besides the immediate benefits arising from such a course of education, it exerts a most momentous influence on the future characters of the pupils,—it decides, in a great measure, as Fellenberg observes, "whether they shall be superficial and desultory throughout life, or whether they shall maintain the contrary habits of application and accuracy with honourable perseverance." So much depends upon the faculty of attention, that its culture should form a leading subject of practical education.

To cultivate the faculty of attention, the effort on the part of the child must be voluntary. By constraint, you may get a child to learn the task you have assigned him; but by this exercise you do not cultivate his power of attention,—you have only stimulated the child to exertion by the fear of punishment, or it may be by the hope of reward. By displaying the wonders of nature or art to a child, you render his attention voluntary, and out of a passive servile creature you make an active self-dependent agent. The best means of cultivating the habit of attention, therefore, is to associate pleasure with the exertions of the pupil, especially the pleasure which flows from success.

To cultivate the faculty of attention our teaching should be suggestive; that is to say, we should always leave something for our pupils to work out themselves; we should never do anything *for* them which they can do for themselves; and whenever we assist them, it should be done in such a way as to lead them as speedily as possible to go on without assistance. We should not seek to *remove* the fair difficulties which lie in a pupil's way, but rather teach him how to *surmount* them. Never do anything, says Abbott, for a scholar, but teach him to do it for himself. How many cases occur, in the schools of this country, where the boy brings his slate to the teacher, saying, he cannot do a certain sum! The teacher takes the slate and pencil,—performs the work in silence,—brings out the result,—

returns the slate to the hands of his pupil, who walks off to his seat, and goes to work on the next example, perfectly satisfied with the manner in which he is getting on. Such a practice, obviously, cannot conduce to the cultivation of the faculty of attention.

We weaken the habit of attention, by requiring our pupils to study too many things at once, or matters which are above their capacity; by directing their minds too long to any one subject; by urging them up to, or beyond, the point of fatigue; or by repeating too frequently the same exercises without variation. Whenever an exercise becomes too easy or too monotonous for our pupils, it then ceases to engage their attention, and acts injuriously upon their minds by engendering habits of listlessness and indifference. When a child, for example, writes the whole page of a copy head, we generally find that the last line is the worst written.

A skilful teacher will sometimes turn to account the incidental circumstances, which are calculated to draw off the attention of his pupils from his lesson: a butterfly enters the schoolroom, — in a moment all eyes are upon it; instead of scolding them for this apparent violation of order, he cheerfully enters into their thoughts and feelings, catches the butterfly, and forthwith gives them a conversational lecture upon their beautiful winged visitor. Faraday never lectures so brilliantly as when he happens to fail in making an experiment.

When children become wearied out with long or intense attention, their enthusiasm may often be revived by bringing in some fresh motive for exertion. Darwin thus happily illustrates this principle: — "A little boy, who was tired of walking, begged of his papa to carry him. 'Here,' says the reverend doctor, 'ride upon my gold-headed cane;' and the pleased child, putting it between his legs, galloped away with delight."

On the cultivation of the habit of attention Miss Edgeworth observes: "Whatever is connected with pain or pleasure commands our attention: but to make this general observation useful in education, we must examine what degrees of stimulus are necessary for different pupils, and in different circumstances. It is not prudent early to use violent or continual stimulus, either of a painful or pleasurable nature, to excite children to application, because we should by an intemperate use of these weaken the mind, and because we may with a little patience obtain all we wish without these expedients. Besides these reasons, there is another potent argument against using violent motives to excite attention; such motives frequently disturb and dissipate the very attention which they attempt to fix. If a child be threatened with severe punishment, or flattered with the promise of some delicious reward, in order to induce his performance of any particular task, he desires instantly to perform the task; but this desire will not insure his success; unless he has previously acquired the habit of voluntary exertion, he will not be able to turn his mind from his ardent wishes, even to the means of accomplishing them. He will be in the situation of Alnaschar, in the Arabian tales, who, whilst he dreamt of his future grandeur, forgot his immediate business. To teach any new habit or art, we must not employ any alarming excitements; small, certain, regularly recurring motives, which interest, but which do not distract the mind, are evidently the best. The ancient inhabitants of Minorca were said to be the best slingers in the world; when they were children, every morning what they were to eat was slightly fastened to high poles, and they were obliged to throw down their breakfasts with their slings from the places where they were suspended, before they could satisfy their hunger. The motive seems to have been here well proportioned to the effect that was required: it could not be any great misfortune for a boy to go without his breakfast; but as this motive returned every morning, it became sufficiently serious to the hungry slingers. It is impossible to explain this subject so as to be of use, without descending to minute particulars. When a mother says to her little daughter, as she places on the table before her a bunch of ripe cherries, 'Tell me, my dear, how many cherries are there, and I will give them to you?'— the child's attention is fixed instantly; there is a sufficient motive; not a motive which excites any violent passions, but which raises just such a degree of hope as is necessary to produce attention. The little girl, if she knows from experience that her mother's promise will be kept, and that her own patience is likely to succeed, counts the cherries carefully, has her reward, and upon the next similar trial she will from this success be still more disposed to exert her attention. The pleasure of eating cherries, associated with the pleasure of success, will balance the pain of a few moments' prolonged application, and by degrees the cherries may be withdrawn, and the association of pleasure will remain. Objects or thoughts that have been associated with pleasure, retain the power of pleasing; as the needle touched by the loadstone acquires polarity, and retains it long after the loadstone is withdrawn, whenever attention is habitually raised by the power of association, we should be careful to withdraw all the excitements that were originally used, because these are now unnecessary; and, as we have formerly observed, the steady rule with respect to stimulus should be to give the least possible quantity that will produce the effect we want. Success is a great pleasure; as soon as children become sensible to this pleasure, that is to say, when they have tasted it two or three times, they will exert their attention merely with the hope of succeeding. We have seen a little boy of three years old, frowning with attention for several minutes together, whilst he was trying to clasp and unclasp a lady's bracelet; his whole soul was intent upon the business, he neither saw nor heard anything else that passed in the room, though several people were talking, and some happened to be looking at him. The pleasure of success, when he had clasped the bracelet, was quite sufficient; he looked for no praise, though he was perhaps pleased with the sympathy that was shown in his success. Sympathy is a better reward for young children in such circumstances than praise, because it does not excite vanity, and it is connected with benevolent feelings; besides, it is not so violent a stimulus as applause. Instead of increasing excitements to produce attention, we may vary them, which will have just the same effect. When sympathy fails, try curiosity; when curiosity fails, try praise; when praise begins to lose its effect, try blame; and when you go back again to sympathy, you will find that, after this interval, it will have recovered all its original power. There are some people who have the power of exciting others to great mental exertions, not by the promise of specific rewards, or by the threats of any punishment, but by the ardent ambition which they inspire, by the high value which is set upon their love and esteem. When we have formed a high opinion of a friend, his approbation becomes necessary to our self-complacency, and we think no labour too great to satisfy our attachment. Our exertions are not fatiguing, because they are associated with all the pleasurable sensations of affection, self-complacency, benevolence, and liberty. These feelings in youth produce all the virtuous enthusiasm characteristic of great minds; even childhood is capable of it in some degree, as those parents well know who have ever enjoyed the attachment of a grateful, affectionate child. Those who neglect to cultivate the affections of their pupils, will never be able to excite them to *noble ends* by *noble means*. Theirs will be the dominion of fear, from which reason will emancipate herself, and from which pride will more certainly revolt. If Henry the Fourth of France had been reduced like Dionysius, the tyrant of Syracuse, to earn his bread as a schoolmaster, what a different preceptor he would probably have made! Dionysius must have been hated by his scholars as much as by his subjects; for it is said, that 'he practised upon children that tyranny which he could no longer exercise over men.' The ambassador, who found Henry the Fourth playing upon the carpet with his children, would probably have trusted his own children, if he had any, to the care of such an affectionate tutor. Henry the Fourth would have attached his pupils whilst he instructed them; they would have exerted themselves because they could not have been happy without his esteem. Henry's courtiers, or rather his friends, for though he was a king he had friends, sometimes expressed surprise at their own disinterestedness: 'This king pays us with words,' said they, 'and yet we are satisfied!' Sully, when he was only Baron de Rosny, and before he had any hopes of being a duke, was once in a passion with the king his master, and half resolved to leave him: 'But I don't know how it was,' says the honest minister; 'with all his faults, there is something about Henry which I found I could not leave; and when I met him again, a few words made me forget all my causes of discontent.' Children are more easily rewarded. When once this generous desire of affection and esteem is raised in the mind, their exertions seem to be universal and spontaneous; children are then no longer like machines, which require to be wound up regularly to perform certain revolutions; they are animated with a living principle, which directs all that it inspires."

While the teacher endeavours to engage the attention of all his pupils, and equally to ensure the progress of all, he must not expect to find that they will all manifest the same amount of attention, or that they will all make the same progress. "Do not hope," says Abbott, "to make all your pupils alike. Providence has determined that human minds should differ from each other, for the very purpose of giving variety and interest to this busy scene of life. Now if it were possible for a teacher so to plan his operations as to send his pupils forth upon the community, formed on the same model as if they were made by machinery, he would do so much towards spoiling one of the wisest plans, which the Almighty has formed, for making this world a happy scene. It is impossible, if it were wise, and it would be foolish if it were possible, to stimulate, by artificial means, the rose, in hope of its reaching the size and magnitude of the apple-tree, or to try to cultivate the fig and the orange where wheat only will grow. No; it should be the teacher's main design to shelter his pupils from every deleterious influence, and to bring everything to bear upon the community of minds before him, which will encourage, in each one, the development of its own native powers. Error on this point is very common. Many teachers, even among those who have taken high rank, through the success with which they have laboured in this field, have wasted much time, in attempting to do what can never be done; to form the character of those brought under their influence, after a certain uniform model, which they have conceived as the standard of excellence. Their pupils must write just such a hand, they must compose in just such a style, they must be similar in sentiment and feeling, and their manners must be formed according to a fixed and uniform model; and when, in such a case, a pupil comes under their charge whom Providence has designed to be entirely different from the beau-ideal adopted as the standard, more time and pains, and anxious solicitude are wasted in vain attempts to produce the desired conformity, than half the school requires beside."

The teacher must suppose human nature to be neither better nor worse than it really is; he must not expect to find the faculty of attention ready formed in the minds of his pupils; on the contrary he must expect that the cultivation of this faculty in his different pupils will demand his constant study, and that unless means are adopted to secure this end all his labour will be utterly lost. Some teachers seem never to make it a part of their calculation that their pupils will be guilty of wilful inattention or do anything wrong, and then, when any misconduct occurs, they are disconcerted and irritated, and look and act as if some unexpected occurrence had broken in upon their plans. A man comes home from his school at night perplexed and irritated at the petty acts of misconduct and inattention of his pupils.

"Sir," we might say to him, "what is the matter?"

"Why, I have such boys, I can do nothing with them. Were it not for their inattention and want of respect, I might have a very good school."

"Were it not for the boys! Why, is there any peculiar depravity in them which you could not have foreseen?"

"No; I suppose they are pretty much like all other boys," he replies despairingly; "they are all hair-brained and unmanageable. The plans I have formed for my school would be excellent, if my boys would only behave properly."

"Excellent plans," might we not reply, "and yet not adapted to the materials upon which they are to operate! No. It is your business to know what sort of beings boys are, and to make your calculation accordingly."

The means which we employ in cultivating the habit of attention, therefore, should have a due regard to the natural differences of temper and talents of our pupils. Inattentive boys may be ranked under five classes: viz. the *feeble*, the *sluggish*, the *volatile*, the *timid*, and the *quick*. An observing teacher soon discovers to which class any particular boy should be referred, and knowing the cause of inattention, he is able to apply the proper remedy.

1. THE BOY OF FEEBLE INTELLECT is inattentive because of his incapacity. He shows a feverish anxiety to understand what is said to him, and failing to do so, he soon relaxes his attention, and gives up in despair. The boy's dulness should never be a subject of censure, nor should he be stimulated to exertion by the hope of reward. Everything should be made as easy for him as possible; and as weariness is sure to follow any unusual stretch of attention, his lesson should be short as well as easy. Above all things we should be patient with him, and never taunt him with the trouble which he may give us. By such means, the feeble boy may become as remarkable for his steadiness and perseverance as he is for his want of intellectual power; such boys not unfrequently become useful men. "If the Creator has so formed the mind of a boy, that he must go through life slowly and with difficulty, impeded by obstructions which others do not feel, and depressed by discouragements which others never know, his lot is surely hard enough, without having you to add to the trials and suffering, which sarcasm and reproach from you can heap upon him. Look over your schoolroom, therefore, and wherever you find one, whom you perceive the Creator to have endued with less intellectual power

than others, fix your eye upon him with an expression of kindness and sympathy."

2. THE SLUGGISH LAZY BOY is inattentive from a want of all mental activity. He hates learning for the trouble which it gives him; and nothing seems to afford him so much enjoyment as lounging at his ease. His intellectual powers may be originally good, but he allows them to rust away for want of use. Here some powerful stimulants are required to arouse him from his mental torpor; every motive to exertion should be tried, until we hit upon the right one. Locke divides sluggish boys into two species: those who are indolent only at their books or lessons; and those who are indolent in everything, even at their play; the mental distemper in the former case seems only local and accidental, whereas, in the latter case, it is general and constitutional; the one, under proper management, may be readily cured, but the other almost defies the power of remedy. The book-saunterer, as Locke would call him, is generally the leader at all sports and games; and when any daring act of mischief has been done, he is sure to have had a hand in it. Scott and Byron, as boys, belonged to this class, since their want of aptitude for learning was doubtless attributable to the dogmatic system under which they were taught. We should never despair of a boy who exhibits great energy of character at his games; for in a sluggish mind of this kind, we often find the slumbering energies of a higher intellect; like the rough diamond, it must be cut and polished before it can shine with its proper brilliancy and loveliness. The most hopeless dunce is that boy in whom confirmed sluggishness is combined with feebleness of intellect.

3. THE VOLATILE BOY is inattentive from his love of novelty. He is continually staring about him, he is the first boy in the class to notice anything unusual, and his exclamation of surprise is generally the key-note of a general outbreak. He is fond of fun, and is a general favourite in the school, for he is neither feared nor envied. His disposition to wander from subject to subject prevents him from becoming sufficiently acquainted

with any. In order to counteract this tendency, we should endeavour to fix his mind upon some subject for which he has shown something like a predilection, by directing his attention to it again and again until we have succeeded; having once developed the faculty in relation to one subject, it then becomes a comparatively easy task to succeed with other subjects. Examples of application and perseverance should often be held up for his imitation, with the view of giving a proper direction to his ambition and enthusiasm.

4. THE TIMID BOY is inattentive for want of a sufficient confidence in his own powers, as well as from a want of that implicit trust which children generally repose in their teachers. The mischievous boys in the school look upon him as fair game to be hunted down. He sconces himself in the most distant nook of the schoolroom, and looks forth from his retreat upon the maps, the great card containing the routine of lessons, the black board with all the mysterious chalk lines upon it, the master with his pointer in his left hand and the chalk in his right,—he looks upon all these, as well as the other school apparatus and appendages, with fear and trembling. Poor child! how can he direct his attention to the lesson that is being given by the master, who probably stands, thundering forth his expositions and demonstrations, as if he were commanding a brigade of artillery. In order to counteract this timidity, he should be treated with gentleness and persuasion; he should be encouraged to apply himself to his work, by being shown that he is quite able to perform it; he should never be pressed for time; he should be shown that patience and earnest attention can do as much, or even more, for him, than quickness of intellect, and that to be slow and sure is more commendable than to be quick and uncertain. Such children are confirmed in their diffidence, when they find that they cannot understand or remember one-tenth of the knowledge forced upon them by an injudicious teacher.

5. THE QUICK CLEVER BOY is inattentive from his extreme mental activity, and from his excess of self-con-

fidence. He is a great talker, but a bad listener; he readily attains a superficial knowledge of a subject, but never attempts to penetrate its depths; from the quickness of his apprehension, he cannot listen with patient attention to the long sermonising lessons of a slow teacher, if he is unfortunate enough to have a slow teacher, who methodically doles out his knowledge by the hour; at the close of such a lesson, he rouses himself up, catches the few concluding remarks, and upon examination appears to have gained a fair knowledge of the lessons. The powers of such a boy should be fully taxed; and to cure him of his presumption and conceit, he should be occasionally puzzled with questions, not difficult in themselves, but requiring for their solution those peculiar attainments in which he is most deficient. Such boys rarely, if ever, realise the brilliant expectations of their friends; like the very early spring blossoms, they soon wither and die; whereas true genius is slow in its growth—the noblest trees are latest in bearing fruit, and the largest animals are last in arriving at perfection. Mere talent requires labour for its development, but genius develops itself spontaneously and unobtrusively.

6. THE BOY OF GENIUS is not inattentive in the ordinary acceptation of the word; for he is occasionally capable of the highest efforts of attention; he sits in a half dreaming mood watching for the moment when a subject suited to his peculiar taste shall present itself; to a common observer he appears dull, but it is the dulness which proceeds from inward thought. His absence of mind is often mistaken for stupidity; and his laconic, yet significant, answers to questions, are frequently attributed to a want of a logical concatenation of ideas; but to appreciate him, we should consider what he does not say, not less than what he actually does say. He is a quiet, retiring, reflective, strange boy;—nobody can understand him,—he is always doing what he should not do, and rarely does what he is required to do,—he talks when he should be silent, and loses his power of speech when he has to answer a question; nobody can understand him, because nobody will understand him;

but all at once he shows a predilection for some particular study,—nature at length asserts her prerogative,—his winged spirit bursts the walls of its prison house, and mounts on high into its kindred sphere of thought; now everybody understands him,—everybody knew perfectly well that his wayward acts were aberrations of genius, and that there could be no mistaking the sovereign stamp which nature had impressed upon his brow. Poor boy! if you had fallen in taking your ethereal flight, what scorn, what obloquy would have been yours!

It becomes the sacred duty, not less than the high privilege, of the schoolmaster of the poor to foster and protect the boy of genius, struggling amid the pressure of indigence and persecution. When his heart is about to sink under the conflict, let him be told of the triumphs of those kindred spirits who have gone before him; Thomas Simpson, who studied mathematics at the loom,—Hugh Miller, who mused on geology when he was hewing stones,—Michael Faraday, who made chemical experiments when he was a journeyman bookbinder,—Ferguson, who watched the stars as he tended his flocks,—Gifford, who studied Latin when he was making shoes,—Peter Nicholson, who wrote his work on carpentry when he was at the bench,—Robert Burns, who carolled his sweetest songs as he followed the plough,—Benjamin Franklin, who drew the lightning from the clouds when he kept a printer's shop.

What are we to do with a boy of genius? The fact is, we should rather ask—what should we refrain from doing? We cannot cultivate his faculty of attention, for in him it grows best spontaneously; is it not better, therefore, to leave him to the bent of his own genius? Laplace would have been as inattentive at an opera, as Mozart would have been at a mathematical lecture.

The faculty of concentration, or continuous attention, which requires careful culture in ordinary minds, seems to spring spontaneously into existence in the mind endowed with genius. This spontaneous development of attention may be regarded as one of the surest evidences of genius. Great men have always been remarkable for the power of concentrating all the energies of their soul on their favourite subject. Newton attributed his own greatness to the power which he had of "keeping a subject constantly in his mind." The mathematician, absorbed day after day in the investigation of the properties of lines and symbols, gives evidence of this continuous attention. The philosopher, who shuts himself out from the gay world, denies himself the ordinary enjoyments of existence, and curbs the kindly sympathies of his nature, to live in a world of abstractions — the world of his own thoughts—he too gives evidence of this remarkable power. Genius seems to be impelled by an irresistible law to deny itself everything which lies without the sphere of its action, and to live upon the impalpable essences of its own creation. Such men are scarcely to be envied, — they too often become martyrs to their application, or unhappy victims to the intensity of their own power. In concluding these observations, we venture to give

A short digression on thought, language, and genius.

Who can measure the pulsations of thought? even our mightiest thoughts come and go like flashes of the subtile lightning. Language retards the passage of thought, as imperfect conductors impede the passage of electricity. Thought is something very different from language, yet we find it difficult to separate the one from the other. We may have an exuberance of language with a poverty of thought; and we may have thoughts which language but poorly conveys. Ordinary thinkers are never at a loss for words; but original thinkers often feel the insufficiency of language — their ideas have to struggle their way into the world of expression. Common-place thoughts are easily expressed, but language often fails to transmit some of our higher conceptions. There are thoughts to which language never yet gave expression, just as there are systems whose light has not yet reached our world. Writings of genius are not so much valued for the mere knowledge which they contain, as for the marvellous power which they have in creating thought. Thoughts of genius are always new, — they are always suggestive, — they awaken fresh trains of thought in every mind that seeks to interpret them ; this is no doubt chiefly owing to the inadequacy of the language to give a sufficiently full expression to the vastness or intricacy of the thought, so that there is always something like indefiniteness about the language. The truth is, language cannot comprehend the length and breadth and depth of a great conception ; for the language is but the shadow of the substance. Ever since the dawn of creation, the sun has shed his light upon the host of planets which surround him, yet he has lost nothing of his original splendour ; so in like manner the glorious productions of creative genius have shed their light, age after age, upon the world, yet they still shine on with undiminished brilliancy and lustre. How exhaustless are the works of genius ! that god-like power which creates a world for the study of generations of ordinary men. Newton affirmed that the diamond was inflammable, but four generations had passed away before the conception was confirmed by experiment; and his law of gravitation has not yet attained its full development. After the lapse of three centuries, the conceptions of Shakspeare have lost nothing of their virgin freshness and bloom.

Slight circumstances often determine the peculiar bent of genius. The swinging of a chandelier in a ball-room led Galileo to the invention of the pendulum : the great philosopher heard not the inspiring music, saw not the gay glittering throng with which he was surrounded, felt no rapture at the smile of beauty ; his attention was concentrated on the synchronism of the vibrations of the chandelier; thousands had age after age looked upon the same thing, without having caught hold of the grand idea which it was calculated to suggest. While in the act of bathing, Archimedes was led to the conception of specific gravity; his attention was awakened by feeling the buoyancy of his body when submerged in the water. The falling of an apple, it is said, led Newton to the discovery of gravitation. Had none before him asked the question —why does the apple fall? Doubtless many had asked the question, but to them nature had given no satisfactory response, — she had only echoed back the inquiry; but the simple fact became, in the mind of the prince of philosophers, the first link in the chain of induction, which led him to the great principle which animates the material universe. Our greatest philosopher was knighted: does the name of Newton appear less illustrious by being shorn of its title of nobility? Newton might do honour to the title, but it could confer no honour upon him. No public monument has yet been reared to bear testimony to a nation's gratitude for the achievements of her greatest son: everywhere we meet with statues and towers and triumphal pillars, erected to record the existence of our monarchs, or to commemorate the deeds of our statesmen and warriors; but, as if conscious of the insufficiency of such a tribute, we have reared no monument to him, whose fame is as far above that of kings, or statesmen, or heroes, as heaven is above earth. Foolish conception! raise a monument of stone and mortar to perpetuate the memory of Newton! his monument is the temple of the universe, and his name is written in imperishable characters in the great laws which he discovered. The pyramids of Egypt will moulder and decay; empires, which at present rule the world, will one day appear as little specks upon the stream of time; old ocean will change its channel; but, secure amid the wreck of time, the fame of Newton will be seen towering in growing majesty and grandeur, for the laws which he discovered will have then received a fuller development. The superhuman genius of Newton appeared at its proper epoch, that is, when the laws of gravitation had to be revealed to humanity. No physical law has been discovered out of which such vast results have been evolved; indeed, it is difficult to conceive that there actually remains to be discovered any law of nature more comprehensive than that of gravitation,—which enables us at once to look back upon the past history of the solar system, and forward to the aspect which it will present at any given future period,—which enables us to determine the existence, position, and magnitude of planetary bodies, which had eluded the searching power of the telescope,—which carries our intelligence into those regions of space where the human eye has not penetrated, or over which the light of our sun has not yet travelled. Upon what apparently trifling circumstances great discoveries often depend! Long before the present seas had rolled, or the present vegetation had covered the earth, a huge monster fortuitously left its footprints upon a plastic strand, which in the lapse of cycles of ages became hardened and covered over with rocks and clays; but the geologist excavates these imprints, and in his hands they become the medals of creation, telling of its vast antiquity, and of the races which had been time after time swept away from the face of the globe before it attained its present condition of perfect maturity. How marvellous are the discoveries of modern philosophy! truly the human race is but in its infancy.

CHAP. IV.

CULTIVATION OF THE INTELLECTUAL FACULTIES, CONTINUED. — CULTIVATION OF MEMORY AND RECOLLECTION.

THE art of memory, says a distinguished writer, is the art of attention; so that, in fact, the cultivation of memory reduces itself to the cultivation of the habit of attention. If we take care to engage the attention, we may safely leave the memory to take care of itself.

There is, however, a great difference between simple memory and that modification of it which we call recollection. Memory is a receptive faculty, and seems to act, in some measure, independently of the will; it is perhaps more subject to physical conditions than any other intellectual faculty, and being considered, in itself, more a natural than an acquired gift, it almost entirely lies without the sphere of the educator. On the other hand, recollection is to a great extent a voluntary power, which grows with our intellectual growth, and therefore admits of the highest degree of culture.

The power of remembering facts in the exact order in which they transpired, or of remembering words in the order in which they were spoken or printed, may be called a mere local memory, where no judgment is exercised by the individual in the selection or arrangement of the materials; but that kind of memory which is based upon a proper classification of the ideas, and not upon mere local or incidental relations, may be called a philosophical memory — the recollective faculty in its highest sense; for while it constitutes a distinguishing feature of the truly cultivated mind, it must at the same time be regarded as one of the most important instruments in the formation of the intellectual character. Teachers are too apt to overrate the value of a mere local memory: the truth is, the boy with a ready parrot-like memory pleases everybody, whereas the boy who has to cogitate and con over what he wishes to remember, rarely stands high in popular estimation.

There are great original differences in the power of memory amongst boys: some boys have naturally a quick as well as a retentive memory; others readily receive knowledge, but as quickly lose it; indeed, a quick memory is not generally a retentive one, for we find that what we readily learn we easily forget, and what we are at some pains to acquire we never lose. Some schoolmasters consider that the best kind of memory is that which simply retains the greatest number of ideas for the longest time; others, with more discrimination, prefer the recollective, reflective, kind of memory, which selects and arranges the facts and ideas as they are committed to the intellectual treasury for future use. A great verbal or local memory has hitherto been too much regarded as the sign and seal of intellectual superiority. A good memory is what everybody can appreciate, but the higher powers of intellect cannot be tested by a common observer. The leading educational axiom, with a certain class of teachers, seems to be—exercise the memory, and out of its exercise all the other intellectual faculties will be evolved—give the child the materials of thought, and all the higher functions of thought will develop themselves—fill the memory with ideas, and then reason, judgment, and imagination will spring up spontaneously. This is a gross error in education: the memory does not exercise the wonder-working powers which these teachers would assign to it; except, perhaps, in classical learning, a mere verbal memory is not of the greatest importance in the acquisition of knowledge, and in reality it is of very little account as regards the development of the other powers of the mind. A great memory is not at all essential to greatness of intellect: Newton and Shakspeare were neither remarkable for extraordinary erudition, nor for unusual powers of memory. Indeed, men who are prodigies in this respect are never otherwise distinguished for intellectual endowments; their minds become so loaded with the ideas of others, as to render them incapable of exercising any independent thought. Memory, to a great man, is an humble confidential servant,—a sort of keeper of the stores,—who is expected to guard and preserve carefully whatever is committed to his charge, and at the same time to be always ready to bring forward anything at the moment it is wanted. We hold that an unusual manifestation of this power in childhood, tends to counteract the healthful development of the other intellectual powers. The boy who can readily commit the language of others to memory, is not compelled to exercise his judgment upon the ideas which are intended to be conveyed to his mind; besides, through a want of discrimination on the part of the master, boys with a ready memory almost invariably rise to the highest places in the school, and thus no adequate inducement can be held out to them to cultivate any other faculty; they consequently seek distinction by the path which is most accessible to them. Teachers are not sufficiently aware of the evils resulting from a negligent disregard of the laws of our intellectual and moral nature. That boy whose memory is cultivated at the expense of his judgment, cannot become a really useful member of society; his vanity is inflated by unmerited applause, and he is unconsciously led to indulge in dreams of future greatness which will never be realised: on the other hand, the boy with a slow, unostentatious, recollective memory, is slighted and discouraged. A teacher should never compliment a boy for having a good natural memory; boys of this kind soon enough gain distinction for themselves, for a good memory is a truly marketable sort of thing, which meets with patronage in all companies and from all classes of society; and it is further important to observe, that there is no gift of which a boy more readily becomes unduly and obtrusively vain, than that of memory. The teacher should, on all fitting occasions, give the highest praise to the boy who habitually cultivates the recollective faculty. It is, however, not surprising that classical teachers should attach an undue importance to the cultivation of verbal memory.

Before the discovery of the art of printing, a retentive memory was one of the most essential prerequisites for literary or even for scientific distinction. "A man who had read a few manuscripts, and could repeat them, was a wonder and a treasure; he could travel from place to place, and live by his learning; he was a circulating library to a nation, and the more books he could carry in his head the better; he was certain of an admiring audience if he could repeat what Aristotle or Saint Jerome had written; and he had far more encouragement to engrave the words of others in his memory, than to invent or judge for himself." And even within the last fifty years, before Mechanics' Institutions had been established, when books were dear and scarce amongst the middle and lower classes of society, a person with a retentive memory was highly prized and esteemed in company. But now, since knowledge has been diffused over the length and breadth of the land, in the form of cheap and useful books, this species of memory has been very much lowered in value. People now have the power of referring to a book for any particular information without being reduced to the necessity of consulting a man who may have read the book. We need not now encumber our memory with passages from any author which we may wish to quote; it is only necessary for us to turn to the page of the book itself where the subject is treated. Mere erudition, too, has lost much of its value in the present age of literature. We have grown too wise for our hoary and decrepid tutors—the ancients. We cannot any longer amuse ourselves with the puerilities of ancient philosophy, or pay our adorations at the shrine of paganism, with all its miserable ideal creations of gods and goddesses. The world has at least passed the first stage of its infancy, and the dawnings of its approaching youth are already being seen from the tops of the mountains. Positive philosophy in its strictest and most useful sense, and Christian philosophy in its highest and purest sense, have been transfused through the countless channels in which our knowledge at present flows,—from the all-creative minds as a centre to the utmost extremities of the body of society. At the same time, it must be admitted that a good verbal memory, under proper management, and duly subordinate to the higher power, is not without its value in the formation of the intellectual character, nor is its use to be ignored as an instrument in the acquisition of technical knowledge. But we again assert that the main business of the teacher is the cultivation of the faculty of recollection—the philosophical memory—not that of mere local or verbal memory.

Having pointed out some of the evils which have crept into our present plans of education, relative to the cultivation of the memory, we shall now proceed to consider the principles upon which memory, in its widest sense, may be strengthened and improved.

Memory is very much influenced by attention, and by our existing intellectual habits.

We always remember those things best on which we have bestowed the most earnest attention. All those means, therefore, which we employ for the cultivation of the faculty of attention, will also tend to cultivate that of memory.

The degree of attention which we bestow on any subject is a voluntary act, but the peculiar direction which our minds will take depends almost entirely upon our previous intellectual habits and associations. "Of four individuals," says Abercrombie, "who are giving an account of a journey through the same district, one may describe chiefly its agricultural produce ; another, its mineralogical character ; a third, its picturesque beauties ; while the fourth may not be able to give an account of anything except the state of the roads and the facilities of travelling. The same facts or objects must have passed before the senses of all the four ; but their remembrance of them depends upon the points to which their attention was directed. Besides the manner here alluded to, in which the attention is influenced by previous habits or pursuits, some persons have an active inquiring state of mind, which keeps the attention fully engaged upon whatever is passing before them ; while others give way to a listless inactive condition, which requires to be strongly excited, before the attention is roused to the degree required for remembrance. The former, accordingly, remember a great deal of all that passes before them, either in reading or observation. The latter are apt to say that they are deficient in memory : their deficiency, however, is not in memory but in attention ; and this appears from the fact, that they do not forget anything which deeply engages their feelings, or concerns their interests."

Our power of memory is limited by our predilections : no person has a memory for every subject of knowledge, because no person possesses a taste and talent for every subject. The mathematician readily remembers his theorems and formulas, whilst he forgets even the name of the existing prime minister. The antiquarian, oblivious of the common occurrences of the day, suffers not a single past event, which is hallowed by time, to escape from his intellectual treasury. The schoolboy, who perfectly remembers the names of flowers, and trees, and birds, and animals, tells his master that he cannot say his task, because he has got a bad memory. The girl, who retains the names of all the articles of fashionable dress, cannot even remember the titles of her father's books. Under proper management, however, the person who can remember things, may also be made to remember words. In order to give a child a memory for any particular subject, we should invest it with some charm calculated to interest his feelings.

Memory is very much influenced by Associations.

The principle of association performs a most important part in nearly all our mental operations. By the association of ideas, two or more conceptions, or ideas, which have been contemplated together, or in immediate succession, become so connected or associated in our minds, that one of them recurring, recalls the others in the same order in which they were at first contemplated. Moreover, a particular idea suggests another idea, which has some kind of relation to it; this second idea suggests a third, and so on to any continued series or train of ideas. This train of successive suggestion may go on to such an extent, that the last idea, or the one which we stop to contemplate, may have no relation to the one with which we first started, excepting in the chain of association existing in our minds. The particular chain of thoughts, which arises in our minds, is no doubt much influenced by our intellectual habits, and by associations previously existing in our minds; but there are also certain general principles of relation, whereby one thought suggests another. These principles of association may be referred to three heads: 1. Contiguity in Time and Place; 2. Resemblance and Contrast; 3. Cause and Effect.

1. Associations of this kind have a relation to succession of time or place. When a boy commits a column of spellings to memory, he remembers the words in the

order of succession, both as to time and place. To impress the words upon the memory, they must be repeated for a certain number of times in the order in which they are to be remembered. This mode of exercising the memory is excessively irksome, and anything but instructive. There are, however, some local associations which are highly pleasurable or painful, as the case may be, and which make very deep impressions upon the mind. Thus we associate an idea with the person by whom it was communicated, or with the place where we first formed the conception, and the idea is recalled by us whenever the person or place enters our thoughts. After long years of travel, by land and water, I visit again my native place,—I wander along a river's bank, —I look upon an old beech tree, whose wide spreading branches afford a cool shade for some children at play, —memory waves her magic wand, recalls the past into existence, and peoples the scene with beings long since dead;—on that flowery bank sit my father and mother, in their holiday attire,—she smiles in his face, as he looks upon their children at play beneath the old beech tree,—I see them too,—I call them by their names, and they answer me; ah! the vision fades,—Stay! dear loved ones, stay! Why will ye fly back to the house of death, and leave me to the desolation of my own thoughts, —to mourn over the memories of the past?

"Mark yon old mansion frowning thro' the trees,
Whose hollow turret wooes the whistling breeze.
That casement, arched with ivy's brownest shade,
First to these eyes the light of heaven conveyed.
The mouldering gateway strews the grass-grown court,
Once the gay scene of many a simple sport;
When nature pleased, for life itself was new,
And the heart promised what the fancy drew.
  See, thro' the fractured pediment revealed,
Where moss inlays the rudely sculptured shield,
The martin's old, hereditary nest;
Long may the ruin spare its hallowed guest!
  As jars the hinge, what sullen echoes call!
Oh, haste, unfold the hospitable hall!
That hall, where once, in antiquated state,
The chair of justice held the grave debate.

Now stained with dews, with cobwebs darkly hung,
Oft has its roof with peals of rapture rung;
When round yon ample board, in due degree,
We sweetened every meal with social glee.
The heart's light laugh pursued the circling jest,
And all was sunshine in each little breast.
'Twas here we chased the slipper by the sound,
And turned the blindfold hero round and round.
Ye Household Deities! whose guardian eye
Marked each pure thought, ere registered on high,
Still, still ye walk the consecrated ground,
And breathe the soul of Inspiration round.
As o'er the dusky furniture I bend,
Each chair awakes the feelings of a friend.
The storied arras, source of fond delight,
With old achievement charms the wildered sight;
And still, with Heraldry's rich hues imprest,
On the dim window glows the pictured crest.
The screen unfolds its many-coloured chart.
The clock still points its moral to the heart.
That faithful monitor 'twas heaven to hear,
When soft it spoke a promised pleasure near;
And has its sober hand, its simple chime,
Forgot to trace the feathered feet of time?
That massive beam, with curious carvings wrought,
Whence the caged linnet soothed my pensive thought;
Those muskets cased with venerable rust;
Those once-loved forms, still breathing thro' their dust,
Starting to life — all whisper of the past."

How true to nature is Byron's picture of the Dying Gladiator!

"I see before me the Gladiator lie;
He leans upon his hand,—his manly brow
Consents to death, but conquers agony,
And his drooped head sinks gradually low,
And through his side the last drops, ebbing slow,
From the red gash, fall heavy, one by one,
Like the first of a thunder-shower; and now
The arena swims around him—he is gone,
Ere ceased the inhuman shout which hailed the wretch who won.
He heard it, but he heeded not—his eyes
Were with his heart, and that was far away;
He recked not of the life he lost nor prize,
But where his rude hut by the Danube lay,
There were his young barbarians all at play,

There was their Dacian mother—he, their sire,
Butchered to make a Roman holiday—
All this rushed with his blood—shall he expire,
And unavenged?—Arise! ye Goths, and glut your ire."

In cultivating the memory of children, the judicious teacher will not fail to associate important ideas with local scenes and events.

The order of time and succession is one of the earliest principles of association; but children should be taught how to employ higher principles of association; badly educated people continue through life to remember things by the mere association of time and place; ideas which have no real or rational connection with each other remain in their minds to the end of existence, associated together. One person ties a string about his finger, another makes a knot in his handkerchief, and so on to other artifices, in order to remind them of something which they particularly wish to remember. We scarcely need observe, that the memory of such people has not been properly cultivated in childhood.

2. Associations of resemblance are rarely so vivid as those of contrast; and hence it follows, that scenes or events, which are in contrast with each other, are more likely to be remembered than those which have a resemblance. Contrast, like light and shadow, makes the objects more prominent; resemblance sometimes proves the greatest stumblingblock to memory. The quiet beauty of the landscape is best remembered, when it is associated with the picturesque majesty of the rugged mountain scenery; the playfulness of childhood most readily suggests to us the gravity of age; and the happy home of peaceful industry and purity is most readily associated in the mind with the wretched dens of idleness and profligacy. Thus, we remember more by contrast than by resemblance. Men of great moral daring and adventure always have a more vivid recollection of the events of their existence, than those who pass their lives in peaceful seclusion. Our past life appears long or short, according to the number of events, or according to the number of ideas, which we remem-

ber: old men who remain much at home find so little to remember in the course of a year of their monotonous existence, that a day of their youth really appears longer to them than the year of their dotage.

3. Although causes and effects generally stand in the relation of contiguity as to time and place, yet there is something more than mere contiguity in the connection; for the constancy and dependence of the connection subsisting between a cause and its effect gives us the idea of a more intimate relation. The minds of children are so constituted, that they most readily remember effects in connection with their causes: for example, they readily associate the light of day, with the presence of the sun; storms, with winds and clouds; the heat of summer, with the long days of sunshine; the improvement of the mind, with application to study; misery with crime, and happiness with virtue; and so on. Associations of this kind are most interesting and instructive; one idea becomes the nucleus of a whole series, and idea becomes so linked with idea, that we are enabled to form a continuous chain of them; thus, for example, we readily remember the following chain of associations: rain falls from the clouds,—the clouds are chiefly formed by winds and mountains,—the cold on the tops of the mountains condenses the moisture in the air, and thus clouds are formed,—the cold on the tops of mountains is caused by the thinness of the air, &c.,—thin air is colder than dense air, because it has a greater capacity for heat,—and so on. The phenomena of nature, as well as the results of science and art, will be most easily remembered when they are associated with their causes. A boy who is acquainted with the physical geography of England finds no difficulty in remembering the localities of our manufactures, of our agriculture, or of our shipping trade. In like manner, the great events of history are readily remembered, when they are taught in connection with their causes. And so on to other subjects of elementary instruction.

Philosophical Associations.

Associations are called philosophical, when a fact or an idea is, by a mental process, associated with some fact or idea previously known, to which it has some relation. The fact or idea thus acquired is said to be put by in its proper place, so that it may be easily recalled to the mind by means of this connection or association. The habit of forming such associations gives rise to what we have called the philosophical memory. One great object of education, as we have already observed, should be the cultivation of this kind of memory.

> "Lulled in the countless chambers of the brain,
> Our thoughts are linked by many a hidden chain;
> Awake but one, and lo, what myriads rise!
> Each stamps its image as the other flies.
> Each, as the various avenues of sense
> Delight or sorrow to the soul dispense,
> Brightens or fades; yet all, with magic art,
> Control the latent fibres of the heart."

These general principles of association naturally suggest to us the following practical rules for the cultivation of memory.

RULES FOR THE CULTIVATION OF MEMORY.

I. *The memory of children is cultivated by leading them to form associations on natural and proper principles.* Some of these principles deserve special notice.

1. *Facts or ideas should be arranged in their order of logical sequence.*

In relating a story, for example, the natural chain of events should not be broken by the introduction of any trifling or extraneous matter, calculated to destroy the unity of the subject.

2. *Classification and generalisation are great helps to the remembrance of facts or ideas.*

Every fresh fact, or idea, should be put by in its proper place in the mind, that is to say, the new fact or idea should be associated with its proper class of facts or ideas already existing in the mind.

A general principle gives the key to the remembrance of a whole series of facts or events. Physical facts are best remembered through a knowledge of their general law; effects, through a knowledge of their cause; and results, through a knowledge of the general principles upon which they depend.

A general formula, in mathematics, enables us to remember, with the utmost precision, all the particular cases which it comprehends. In the subject of grammar, the general fact, that all nouns ending in *y*, when preceded by a consonant, form their plural by changing the *y* into *i e s*, very much aids the memory; and so on to other general principles of language. If a child is told that James II. was cruel, bigoted, and blindly despotic, he has got in his mind a general fact, which will assist him in remembering the most remarkable events in this monarch's reign. The best way to make a boy remember the directions in which the constant and periodic winds blow, is by teaching their cause. A knowledge of the general physical properties of a substance, affords the greatest aid to the pupil in remembering the various experimental facts which may be given in relation to it: thus, for example, a knowledge of the general property, that acids combine with alkalies, enables the pupil to remember the result of any particular combination of these two classes of substances. These illustrations might be indefinitely extended.

Teachers, therefore, should constantly aid their pupils in grouping their ideas under general heads or principles. Even in the common concerns of life this is of great utility.

"Betty," says a farmer's wife to her servant, "Betty, you must go to market for some things." "Yes, Ma'am." "But, Oh-deary-me! you have got such a bad memory, that if you have only three or four things to do, you are sure to forget one of them. Do try this time to remember what I want. You have so many good qualities, and you are so tidy and so good-looking, that I really do not wish to part with you; but your forgetfulness is insufferable." "Yes, Ma'am, — but if my Maker has given me a bad memory, how can I help it?" "Listen to me — I want suet and currants for the pudding." "Yes, Ma'am, suet and currants for the pudding." "Leeks and barley for the broth; don't forget them." "No, Ma'am, leeks and barley for the broth." "A shoulder of mutton, a pound of tea, a pound of coffee, six pounds of sugar; be sure you don't forget the sugar, Betty, for we have not a bit in the house." "No, Ma'am, I won't forget the sugar." "And mind you call at the dressmaker's, and tell her to bring out with her the calico for the lining, some black thread, and a piece of narrow tape." "Yes, Ma'am." "Stay, Betty, you'd better tell the grocer to give us a jar of black currant jam."

During this colloquy the honest farmer had been apparently engaged in making entries in his farm-book, but in reality quietly and attentively observing what had been going on. He had his own views about Betty's bad memory; he felt too that Betty's confession was no atonement, and most certainly gave no promise of amendment. The fact is, the honest farmer had almost a father's love for poor Betty.

"Come here, lass," said he, "come here, and let me see if I cannot get you to mind what you are going for." "Yes, Sir." "Now then, tell me what you are going to bring from market." "Well, Sir, there is sugar and tea, a shoulder of mutton, coffee, — coffee — let me see — and ——." "My good girl, that is not the way of doing business. You must arrange your articles under different heads, as the parson does his sermon, or you will never remember them. Now it appears to me that there are three things to provide for; 1st. Breakfast; 2nd. Dinner; 3rd. A Dressmaker."

"1st. What are you to get for the breakfast?" "Sugar, tea, and coffee, and jam, — which I shall get at the grocer's."

"2nd. What articles are you to get for the dinner?" "There's the butcher's meat, the broth, and the pudding." "Now, what have you to get for each of them?" "Well, Sir, the shoulder of mutton, leeks and barley for the broth, and suet and currants for the pudding." "Very good — where do you get them?" "The mutton and suet at the butcher's; the leeks at the gardener's; the barley and currants at the grocer's." "But you had something to get at the grocer's for the breakfast?" "Yes, Sir, I had sugar, tea, coffee, and jam, to get for the breakfast, and besides I have barley and currants to get, — so that —let me see — I have altogether six things to get at the grocer's." "Very good, Betty, — you are getting to understand matters. Now, when you get to the grocer's, fancy one part of his counter your breakfast table, another part of the counter your dinner table, and then run over all the articles and see that you have got them all right." "Oh yes, Sir, that is capital; I feel sure that I shall not forget anything to-day."

"3rd. The dressmaker. What has she to bring with her to-morrow?" "The calico, the thread, and the tape." "Now go, Betty, and remember that I feel much interested in your success."

"Well, Betty," says her mistress, "you have got back." "Yes, Ma'am." "But have you brought all the things right? — let me see, — sugar, tea, coffee, barley, ... ; well-a-day! if you have not brought everything right this time." "Betty," says her master, "I am glad to see that you are an apt scholar; and I do believe, that if you would always try to disentangle things, in the way we have done to-day, you might, by and by, rival the schoolmaster for memory, and the people say that he can repeat the catechism backwards." "Yes, Sir; I am certainly much obliged to you, and I shall always try to follow out what you have shown me to-day." "Remember also never to blame your Maker for faults which are due to your own negligence: be good, and endeavour in all things to improve the talents that He has given you, and I should not be at all surprised if you render yourself fit for becoming a farmer's wife."

3. *Reasoning is one of the best helps to memory.*

Results should be, as far as possible, associated with the processes of reasoning by which they are derived. This is especially applicable to all mathematical subjects. Many students find a greater difficulty in remembering results, than in remembering the steps of reasoning by which these results are established. Such persons will say to you, — "I do not remember the formula exactly, but I remember the way in which it is got, and that to me is far more valuable."

One of the greatest drudgeries, in the form of tasks, is committing arithmetical tables to memory. But even here, if the memory is aided by reasoning, the drudgery of the task is very much lessened. Thus, for instance, in learning the multiplication table, the child should be shown how to derive the successive results of the table, after the manner described in Tate's Principles of Arithmetic.

The *ideas*, rather than the *words*, of an author, should be remembered. The passage, which we wish to remember, should be analysed, and the essential ideas separated from the non-essential. In order to show that ideas, not words, are the great things to be remembered, the teacher should explain to his pupils how the same ideas may be expressed in different forms of language. Problems in arithmetic afford excellent illustrations of this : let us suppose the following question to be proposed by a master to his pupils: —

Question. A draper paid eight pounds ten shillings for six pieces of fine linen, containing eighty yards ; how much should he pay for twenty-five yards of the same kind of linen ?

Or thus in other words —

Question. How much should a draper pay for twenty-five yards of fine linen, allowing that he had paid eight pounds ten shillings for eighty yards of it ?

"Here," (we may suppose the master to say to his pupils) "we must first write down an abstract of the data, or things given, necessary for solving the question, or, in other words, we must separate the essential data from the non-essential. Now the number of pieces is not necessary for the solution of the question, because the measure of the whole is given, and the cost required is for a certain number of yards, without any regard to the number of pieces. The essential data of the question are as follows: —

"The cost of 80 yards is 8*l.* 10*s.*; the cost of 25 yards is required. Having made this abstract of the question, we may now go on with the solution," &c.

4. *Associations of resemblance and contrast are great helps to the memory.*

This principle of association may be used with advantage in almost every branch of instruction. In geography, the pupil should contrast different regions of the globe with each other, or, it may be, trace their various prominent points of resemblance, as to form, climate, population, &c. The same course should be pursued in history, divinity, arithmetic, chemistry, and other branches of natural philosophy, &c. The teacher should classify, for the use of his pupils, the subjects which are most eligible for being viewed in contrast or resemblance, as the case may be. The following brief forms of classification will sufficiently indicate the nature of the method proposed.

Geography.

Subjects of contrast. The old world and the new world;* the two hemispheres;* the frigid and torrid zones — climate, vegetable productions, &c.; Russia and Switzerland; Spain and England; the Andes and the Cheviots; the Amazon and the Thames; London and Paris;* Lancashire and Devonshire; eastern and western coasts of continents; temperature of the land and temperature of the ocean; inundations of Siberian rivers with inundations of tropical rivers; the Hindoos and the Russians; the Llanos of South America in the dry and the wet season; the climate of New South Wales with the climate of Canada; the rains of the torrid with those of the temperate zone ; the Esquimaux with the Patagonians ; Quito with the Steppes of Astrakhan in Southern Russia ; the Highlands and Lowlands of Scotland ; the Valley of the Mississippi with the Desert of Sahara ; the rivers of eastern with the rivers of western America ; Cornwall and the district around the Wash ; &c.

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* The subjects marked thus are eligible for comparison as well as contrast.

Subjects of resemblance and comparison. Spain and Italy ; France and England ; the Thames and the Seine ; Manchester and Lyons ; Paris and Edinburgh ; Glasgow and Manchester ; Edinburgh and Dublin ; Great Britain and Vancouver Island ; Great Britain and New Zealand ;* the Islands of Ceylon and Madagascar ; the Gold Fields of Australia with those of California ; the water-shed between the basins of Hudson's Bay and the Gulf of Mexico with the water-shed between the basins of the Baltic and the Black and Caspian Seas ; the Isthmus of Suez with the Isthmus of Panama ; Milford Haven and the Moray Firth ; the Vale of Exe and the Vale of Eden ; the Paris basin with the London basin ; the coast of Norfolk with the opposite coast of Holland ; Hull and Liverpool as seaports ; the exports of Russia with the exports of Canada ; the currents of the South Atlantic with those of the North Atlantic ; &c.

History.

Subjects of contrast. Alfred the Great and Charles II. ; Cromwell and Charles I. ; Mary and Victoria ; Elizabeth and Mary of Scotland ; Henry VIII. and John ; the 14th century and the 19th ; Cranmer and John Knox ; Jeffries and Hale ; Watt and Napoleon ; &c.

Subjects of resemblance. William I. and Edward I. ; Charles I. and James II. ; Henry III. and Edward III. ; Cromwell and Napoleon ; Marlborough and Wellington ; Richard I. and Edward VI. ; William III. and Richard III. ; Wolsey and Thomas à Becket ; Bacon and Newton ; Blake and Nelson ; Captain Cook and Columbus ; &c.

The Scriptures.

Subjects of contrast. Adam and Christ; Cain and Abel; Esau and Jacob; David and Solomon; Joshua and Samuel; Paul and John; Paul and Balaam; Matthew and Luke; Enoch and Judas Iscariot; Joseph and Moses; Samson and Gideon;* Judaism and Christianity;* &c.

Subjects of resemblance. Moses and Christ;* Samson and David; Noah and Lot; Elijah and Elisha; Paul's conversion given in Acts, 9 chap., and in Acts, 26 chap.; Death of Christ as given by the four Evangelists; &c.

Mathematical Geography and Astronomy.

Subjects of contrast. Surface of the earth and a known portion of it; latitude and longitude; summer and winter; Jupiter and the Earth; the Sun and the Planets; distance of Neptune and the distance of the Moon; distance of Neptune and the distance of the nearest fixed stars; the Sun and the Moon; &c.

Subjects of comparison. Comparative magnitudes of the planets; approximate numbers representing the relative distances of the planets from the Sun; &c.

Properties of Bodies.

Properties in contrast. Long and short, round and angular, &c.; hard and soft; fluid and solid; transparent and opaque; elastic and non-elastic; black and white; nutritive and poisonous; &c.

Properties in resemblance or comparison. Resemblances of form; degrees of hardness or softness; more or less transparent; resemblances of colour; more or less elastic; more or less nutritive; &c.

Experimental Science.

Subjects of contrast. Acids and alkalies; oxygen and hydrogen,* &c.; north and south poles of a magnet;*

positive and negative electricity ;* reflection and refraction ; conduction and radiation ; &c.

Subjects of resemblance. Chlorine and sulphur ;* nitrogen and carbonic acid ;* light and heat ; ebullition and evaporation ; dew and fog ; electricity and magnetism ; &c.

Arithmetic and Mathematics.

In no subject is the memory more aided by resemblances and contrasts, than in that of mathematics. Subtraction is the reverse of addition ; division is the reverse of multiplication ; and the processes of Rule of Three may be regarded as combinations of the four elementary operations of numbers. The analogies of the cylinder, cone, and sphere, are too obvious to escape notice : the pupil who has been shown how to derive the surface of the sphere from that of the cylinder, will never forget those rules of mensuration treating of these three solids.

The Alphabet.

The dissimilar letters of the alphabet should be taught to children, before those that are similar ; for, as we have already shown, resemblances, in such cases, confound the memory of children. The child should be taught the Egyptian characters first, on account of their being the most simple form of the letters ; and the master should draw them, on a bold scale, with chalk upon the black board, while he is giving his lesson.

In order to interest the children, and help them to form familiar associations, graphic names may be given to the different letters, descriptive of their peculiar forms. Thus, **O** may be called the round **O** ; **D** half the round **O** ; **S** a pot-hook ; **J** a walking stick ; **U** a horse-shoe ; **B** crooky-back ; **V** a fool's cap upside down ; **A** a fool's cap with a bar through it ; **I** a blind stroke ; **H** two blind strokes with a bar between them ; &c.

While comparing the forms of different letters with each other, the teacher will very much aid the memory of the children, by showing them how one letter may be converted into another; thus, **P** is readily converted into **B**, or into **R**; **C** into an **O**, and then **O** into **Q**; **I** into **L**, or into **T**; **I** into **F**, and then **F** into **E**; and so on.

The Spelling and Meaning of Words.

The spelling of words together, which have nearly the same sound but differently spelt, such as *of* and *off*, *were* and *where*, &c., is a bad plan, on account of the resemblance of the words; and the method of teaching spelling, by columns of words alphabetically arranged, is equally objectionable. The niceties of spelling and meaning should belong to a higher stage of instruction. Words in contrast having the same radical part, are easily remembered; thus we have

Words in contrast. Agree and disagree; join and disjoin; temperate and intemperate; humanity and inhumanity; thankful and unthankful; kindness and unkindness; &c.

The following illustrations of the method of instruction here proposed will no doubt be acceptable to many of our readers.

Illustrations.

GEOGRAPHICAL CONTRASTS AND RESEMBLANCES.

1. The Old and New World.

Contrasts.

The Old World.	The New World.
History ancient.	History modern.
The principal mass of the Old World, Asia and Europe, extends from East to West, over one-half of the circumference of the globe.	The New World extends from North to South, over two-fifths of the circumference of the globe.
The mountain ranges run from East to West.	The mountain ranges run from North to South.
Asia — Europe — lies within the torrid, north temperate, and north frigid zones.	America comprehends all climatic zones, and hence presents a greater variety of phenomena.
Mountain ranges somewhat central.	The mountain range extends like a band along the western border.
Rivers of Europe small.	Great water basins. Rivers and Lakes very large.

Traversed by different mountain chains.	One mountain chain, the Andes and Rocky Montains.
Vast table lands or plateaus. The mountains and plateaus of Asia cover five-sevenths of its surface.	Vast plains, which form two-thirds of its surface.
Volcanoes on the Continent.	Great Volcanoes on the Islands.
Coast-line of Europe very much indented.	Coast-line not so much indented as Europe, but more indented than Asia or Africa.
Inhabitants white, dark, black, &c.	Native inhabitants chiefly red men.
Animals. Lion, Tiger, Leopard, Elephant, Giraffe, Cow, Crocodile, Nightingale, &c.	Animals. American Lion, Jaguar, Panther, Grisly Bear, Buffalo, Alligator, Mocking Bird, &c.

Resemblances.

Land in two great masses, Europe and Africa in the West, and Asia in the East.	Land in two great masses, North and South America.
Isthmus of Suez connects Africa with Europe and Asia.	Isthmus of Panama connects North with South America.
The coast-line of Europe is more broken or indented than that of Asia, and still more than that of Africa.	The coast-line of North America is more broken or indented than that of South America.
Europe better adapted for human societies than Asia or Africa.	North America better adapted for human societies than South America.
Europe 1 mile of coast to 150 of surface; Africa 1 mile of coast to 620 of surface; Asia 1 mile of coast to 460 of surface.	North America 1 mile of coast to 230 of surface; South America 1 mile of coast to 380 of surface.
The direction of the land corresponds with the general direction of the mountain masses.	The same as in the Old World.
The southern extremity terminates in a point directed towards the Southern Ocean, while they go widening towards the North.	The same as in the Old World.
The peninsulas have nearly all the same direction.	The same as in the Old World.
The highest mountain in the Himalaya is a little more than 5 miles above the level of the sea.	The highest mountain in the Andes is nearly 5 miles above the level of the sea.

2. EUROPE AND ASIA.

Contrasts.

Europe.	Asia.
In the highest condition of civilisation and progress.	The cradle of civilisation, but now chiefly sunk in ignorance and superstition.
Religion, chiefly Christianity.	Religion chiefly Mahometanism, and idol-worship.

Contour most varied, but its peninsulas are not large. Indentations in all parts, by the ocean and by inland seas; thereby enjoys 1 mile of coast for every 150 square miles of surface.	Contour more uniform. Has vast peninsulas on its eastern and southern coasts, but the indentations of the coast-line are not so numerous; it in consequence only possesses 1 mile of coast for every 460 square miles of surface.
The inland seas, and the ocean lying between the indentations, form nearly one-half of its surface.	In spite of the *depth* of the indentations, there remains a great preponderating mass of unbroken land towards the centre.
Open to inland navigation.	Open only at its margins.
Lies between the other portions of the Old World and America.	Farthest removed from the New World.
Best adapted for human societies.	Vast portions scarcely accessible to commerce.
Its physical features are highly diversified.	All its physical features are on a gigantic scale.
Broken in relief by mountains and valleys. The highest mountains do not exceed 3 miles in height. Extensive plains fresh with vegetation.	Great mountains nearly double the height of those in Europe. Vast plateaus and deserts.
Its numerous peninsulas form about one-third of its surface.	Its vast peninsulas only form one-fifth of its surface.
Like a perfect tree, with numerous spreading branches, clothed with luxuriant foliage.	Like a vast trunk, with a few large branches, with a scanty foliage.
Rivers numerous, but not large.	Rivers large, but not numerous.
Climate chiefly temperate. Winds and rains variable.	Burning heats in its equatorial portions, and extremes of cold in its northern regions. Subject to tropical winds and rains.
All the vegetables essential to life grow in almost every portion.	Exuberant vegetation in its tropical portions, and sterility in the frozen tracts of Siberia.
Wild animals are not numerous.	Wild animals exceedingly numerous.
Domesticated animals very numerous.	Domesticated animals not numerous.
Neither flowers nor birds have much variety or brilliancy of colour; but the flowers refresh us with their scent, and the birds delight us with their song.	In the tropical regions, the flowers and birds have the most brilliant colours; but the flowers have little scent, and the birds have no song.
Rich in minerals.	Poor in minerals.

3. England and Spain.

Contrasts.

England.	Spain.
Forms the greater portion of an island.	Forms the chief portion of a peninsula.

For the most part level, yet beautifully diversified with hills, valleys, and plains.	Mountainous; a considerable portion forms a plateau.
The elevation of the highest mountain, Scaw Fell, in Cumberland, is only a little more than half a mile.	The elevation of the highest point of the Pyrenees is about 2½ miles.
The rivers are numerous, and many of them are navigable for a considerable distance into the interior.	The rivers are not numerous, and none of them can be said to be navigable.
The climate is damp and changeable.	The climate is generally warm and salubrious.
Grows all kinds of grain, &c., but the climate is too cold for the vine.	Fine agricultural country. Grows grapes and oranges.
Rich in coal, and also in iron, copper, and lead ores.	No coal.
The religion is Protestantism.	The religion is Romanism.
Has advanced very rapidly since the Reformation.	Has retrograded since the period of the Reformation.
The population of the capital is upwards of two millions.	The population of Madrid, the capital, is only one-tenth that of London.
The work-shop of the world. A land of steam-engines, railways, and manufactures.	Cannot supply its own people with manufactured goods.
The greatest country in the World.	One of the most contemptible states in civilised Europe.
Possesses the most perfect political institutions.	A prey to civil discords; — no protection to life or property.
The people are pious, industrious, generous, and brave.	The people are bigoted, indolent, treacherous, and base.
Its colonies flourish in every part of the globe.	Its colonies are dismembered and enfeebled.
Stands foremost in the ranks of modern science and art.	Has done nothing to advance humanity.
Famed for her philosophers, poets, statesmen, and heroes.	Possesses no name associated with greatness.
The greatest maritime power in the world's history.	Her ships are barely sufficient for her own limited commerce.

HISTORICAL CONTRASTS AND RESEMBLANCES.

1. Alfred the Great and Charles II.

Contrasts.

Alfred the Great.	Charles II.
The glory of his country. Amid dangers and toil, devoted himself to his country.	A disgrace to humanity. After much bloodshed, he became king, and then devoted his country to himself.
The saviour of his country.	Sold his country to France.
Established just and merciful laws.	Violated the rights and privileges of his people.

A true patriot. Laid the foundation of the future greatness of his country. Said that "The English ought to be as free as their own thoughts."	Cared only for having the name and privilege of a king. Content if the nation would only last his time.
Rewarded his friends and conciliated his enemies. Temperate, frugal, studious, prudent, and pious. Burnt the cakes when thinking of his country. Divided his time. Converted his enemies to Christianity.	Ungrateful to his friends and heedless of his enemies. Sensual, extravagant, idle, thoughtless, and profuse.
Beloved and revered during his life, and almost idolised after his death.	Hated and despised during his life, and at his death the dogs were permitted to lick his blood.

2. Mary and Victoria.

Contrasts.

Mary.	Victoria.
Despotic and cruel. Bigoted and intolerant. Morose and miserable.	Liberal and benevolent. Pious and tolerant. Cheerful and happy.
A blind Romanist.	An enlightened Protestant.
Died childless.	Lives the mother of a large family.
A friend of ignorance and superstition.	A promoter of education and religion.
Lived in an age of darkness and ignorance.	Lives in an age of knowledge and progress.
An age of thumbscrews, racks, and other instruments of torture.	An age of science, of steam-engines and of all the arts which add to human happiness.

SCRIPTURE CONTRASTS AND RESEMBLANCES.

1. Cain and Abel.

Contrasts.

Cain.	Abel.
Cain was the first born. A tiller of the ground.	Abel the first that died. A keeper of sheep.
Was wicked.	Was righteous.
Offered to God the fruit of the ground.	Offered to God the firstlings of his flocks.
His offerings were not accepted by God.	His offerings were accepted by God.
Slew his brother.	The voice of his blood cried unto the Lord from the ground.
The first murderer. Branded with God's curse.	Enjoyed God's favour.
Cain became a vagabond.	Abel died in the hope of salvation.
Cain had children.	Abel died childless.

2. Moses and Christ.

Resemblances.

Moses.	Christ.
Delivered the Israelites from the bondage of the Egyptians.	Delivered us from the bondage of sin.
The founder of the ceremonial dispensation. The founder of Judaism.	The founder of the New Testament dispensation. The founder of Christianity.
Delivered to man the ten commandments.	Gave to man the law of faith.
Led the Israelites through the wilderness.	Said to His followers, "Lo, I am with you, even unto the end of the world."
Moses lifted up the brazen serpent in the wilderness, so that those who looked upon it might be healed of the bites of the fiery serpents.	Christ offered up Himself upon the cross as a sacrifice for the sins of man, so that those who look upon Him may be healed of the leprosy of sin and corruption.
Moses conducted the Israelites towards the land of Canaan, the promised land flowing with milk and honey.	Christ leads His people to the heavenly Canaan.

3. Adam and Christ.

Contrasts.

Adam.	Christ.
Adam was created.	Christ, as the Son of God, existed from all Eternity, and was the Creator of all things.
Through Adam we lost a terrestrial paradise.	Through Christ we shall gain a celestial paradise.
Adam broke the law.	Christ fulfilled the law and made it honourable.
By Adam's sin, death came into the world—death temporal as well as spiritual.	By the death of Christ, we shall be restored to life.
In Adam all die.	In Christ all shall be made alive.
Through Adam sin came into the world.	Through Christ we shall be clothed with righteousness.
Through Adam man was rendered liable to God's wrath and curse.	Through Christ man is restored to God's favour.
Through Adam we are the servants of the devil.	Through Christ we become the servants of God.
Through Adam disease and pain entered the world.	Through His stripes we are healed. He has a fellow-feeling in all our pains, and pleads our cause at God's right hand.
Adam, as the first man, is our natural father.	Christ is the spiritual father of all those who trust in Him.
Adam's death was not propitia-	Christ's death was an atonement

tory, for he suffered death on account of his own sin.	for the sins of the world, for He had no sin, neither was guile found in his mouth.
Through Adam we are called upon to fulfil the works of the law.	Through Christ salvation comes by faith and not by works.

5. *To improve the memory we should associate important ideas with things, scenes, and events. We should give graphic pictures of important scenes and events.*

Maps, useful and scientific pictures, scripture texts, and important school rules, should be hung in the schoolroom. These objects, being kept before the eye, suggest important trains of association. After a time such things, no doubt, fail to arrest the attention; but, in order to avoid this consequence, they should be removed at stated periods and fresh ones put in their place, or they may simply be taken away for a time and then replaced. The teacher will at once see the value of having such rules as the following hung up in the schoolroom:—1. A suitable place for everything, and everything in its place; 2. A proper time for everything, and everything in its time; 3. A distinct name for everything, and everything called by its name; 4. A certain use for everything, and everything put to its use; 5. Try to improve at school every day; 6. Guard against vulgar language; 7. Pray daily to God, and praise His holy name. The rules put up by the master should always have a relation to the existing circumstances: thus, for example, during the fruit season the following would be highly appropriate, —"Never eat sour or unripe fruit."

Teachers cannot be too strongly impressed with the fact, that our school-day associations exist in the mind to the latest period of our existence.

"The School's lone porch, with reverend mosses grey,
Just tells the pensive pilgrim where it lay.
Mute is the bell that rung at peep of dawn,
Quickening my truant feet across the lawn;
Unheard the shout that rent the noontide air,
When the slow dial gave a pause to care.
Up springs, at every step, to claim a tear,
Some little friendship formed and cherished here;
And not the lightest leaf, but trembling teems
With golden visions and romantic dreams!"

Geography should be taught in connection with history. No teacher should give a lesson on the geography of a country without associating the leading geographical facts with the most remarkable events of its history, or with its existing resources of trade and wealth. He should also introduce historical and picturesque descriptions of the great cities of the country of which he treats. Great cities constitute the identity of a people:—their past history is sculptured on their monuments, churches, and public buildings;—their existing industry, and real sources of wealth and power, are exhibited in their machinery, their factories, their shipping, and their market-places or thoroughfares, where the products of nature and art are bought and sold;—their intellectual, moral, and political tendencies, may be seen in the tastes, habits, and pursuits of the people that crowd their public rendezvous; for the ceaseless struggle of opinions, passions, and interests, which here manifest themselves, may be regarded as the throbbings of the great heart of society, which extend themselves, as certainly as by the action of an hydraulic law, to the utmost extremities of the living mass.

The events of scripture history should be taught in connection with the map of Palestine. In like manner, history should be taught in connection with geography. Local associations give vividness and power to the remembrance of events.

> "And hence the charm historic scenes impart;
> Hence Tiber awes, and Avon melts the heart."

A man who has looked upon the field of Bannockburn, where the devoted bands of Scottish patriots withstood the onslaught of the mighty host of their oppressor, will never forget the historical events connected with the battle. "That man," says Johnson, "is little to be envied, whose patriotism would not gain force upon the plain of Marathon, or whose piety would not grow warmer among the ruins of Iona." Who can look on the statue of Henri IV., standing on Pont-Neuf, which crosses the Seine in the heart of Paris, without having the remarkable events of this chivalrous monarch's life more deeply impressed upon his memory? The birth-places or the sepulchres of great men form some of our most remarkable links of association.

> "'Twas ever thus. As now at Virgil's tomb
> We bless the shade and bid the verdure bloom;
> So Tully paused, amid the wrecks of Time,
> On the rude stone to trace the truth sublime;
> When at his feet, in honoured dust disclosed,
> The immortal Sage of Syracuse reposed."

Picturing out scenes. Children are passionately fond of pictures, whether real or imaginary, whether addressed to the outward or to the inward sense of vision. This passion constitutes one of the most unconquerable instincts of our nature: but why should we wish to conquer it? none but antiquated governesses or old maiden ladies would do such violence to our happy nature.

> "'Twas here, at eve, we formed our fairy ring;
> And Fancy fluttered on her wildest wing.
> Giants and genii chained each wondering ear;
> And orphan sorrows drew the ready tear.
> Oft with the babes we wandered in the wood,
> Or viewed the forest feats of Robin Hood:
> Oft fancy-led, at midnight's fearful hour,
> With startling step we scaled the lonely tower,
> O'er infant innocence to hang and weep,
> Murdered by ruffian hands, when smiling in its sleep."

The gallery lessons given to children should contain pictures addressed to the imagination. This mode of instruction not only secures their attention by gratifying their intellectual instincts, but also supplies their recollective faculty with appropriate links of association. The picturing style of teaching gives life and vivacity to a class; whereas the dull, dry, sermonising style of giving a lesson is better than any soporific to be found in the Pharmacopœia. The tick-tick of the clock in our room is rarely heard: so it is with the repetition of certain set forms of words: the sounds grow familiar to our ears; and the ideas, however sacred, like an oft-told tale, cease to make any impression on our minds.

This is especially the case with respect to scripture reading. The plan of picturing out the scenes and events, connected with a passage of scripture that may have been read, is eminently calculated to produce the most vivid and lasting impressions on the minds of children.

In order to illustrate this plan of teaching, let us suppose the first three verses of the sixth chapter of St. John to have been read by the master to his pupils. How few of the children would trouble themselves at all about the familiar sounds that had fallen upon their ears! and of the few who had given their attention to the matter, how many of them could form any clear conception of the ideas intended to be conveyed? A skilful teacher, it is true, might, by the usual method of interrogation, succeed in making the children comprehend the subject-matter of the verses; but how long would they retain the ideas thus conveyed to them? how many of them would be able to answer the questions that might be put to them by the master on the following day?

But now suppose that the master could, by some magic power, show to his pupils the real scene which these verses describe.* Suppose he could go back through the eighteen hundred years which have elapsed since these events occurred, and taking his pupils to some elevation in the romantic scenery of Palestine, from which they might overlook the country of Galilee, show them all that this chapter describes.

"Do you see," he might say, "that wide sea which spreads out beneath us, and occupies the whole extent of the valley? That is the sea of Tiberias; it is also called the sea of Galilee. All this country which spreads around it is Galilee. Those distant mountains are in

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* This picture is mainly taken from Abbott's "Young Christian."

Galilee, and that beautiful wood which skirts the shore is a Galilean forest."

"Why is it called the sea of Tiberias?" a child might ask.

"Do you see at the foot of that hill, on the opposite shore of the lake, a small town? It extends along the margin of the water for a considerable distance. That is Tiberias, and the lake sometimes takes the name of that town."

"But look! Do you see that small boat coming round a point of land which juts out beautifully from this side of the lake? It is slowly making its way across the water; we can almost hear the splashing of the oars. It contains the Saviour and some of his disciples. They are steering towards Tiberias: now they approach the shore; they stop at the landing, and the Saviour, followed by his disciples, walks up the shore."

"Some sick person is brought to the Saviour to be healed. Another and another is brought. A crowd collects around Him. He retreats slowly up the rising ground, and, after a little time, He takes his place upon an elevated spot, where he can overlook and address the throng."

If teachers could accustom themselves to the habit of drawing pictures like this, how strong and how lasting would be the impression made on the minds of their pupils! Years, and perhaps the whole of life itself, would not obliterate the impression. Even this faint description, though it brings nothing new to the mind, will make a much stronger and more lasting impression than merely reading the narration would do. And what is the reason? Why, it is only because we have endeavoured to lead you to picture this scene to your minds, to conceive of it strongly and clearly. Now any teacher can do this for himself, in regard to any passage of scripture. It is not necessary that we should go on and delineate in this manner the whole of the account. Each teacher can, if he will task his imagination, picture for himself the scenes which the Bible describes. And if he does bring his intellect and his powers of conception to the work, and read not merely to repeat formally and coldly sounds already familiar, but to bring vivid and clear conceptions to his mind of all which is represented there, he will be interested himself and will also interest his pupils. He will find new and striking scenes continually coming up to view, and will be surprised at the novelty and interest which this simple and easy effort will throw over those very portions of the Bible with which the ear has become most completely familiar.

6. *Frivolous, unnatural, or unpleasant associations should be avoided. Fear enfeebles the memory, and terror paralyses it.*

Our associations should always be in keeping with the dignity of the subject. The unnatural and trifling modes of association, adopted by the advocates of SYSTEMS OF MNEMONICKS, are unworthy the notice of intellectual teachers of youth. If any artificial system of memory be necessary, it should be constructed on the principle of the chemical nomenclature, which is really one of the best systems of memoria technica that ever has been invented.

The plan of giving tasks as punishments cannot be too strongly deprecated: it invests learning with painful associations, and most effectually engenders a sullen and wilful habit of inattention.

Fear enfeebles the memory, by producing tremor and nervous debility. How can a boy exercise his memory when the terrors of the rod are placed before him? How can the intellectual faculties exercise themselves freely or vigorously when the soul is manacled? When the axe of the executioner is about to fall upon the doomed wretch, can you expect him to admire the surrounding scenery, or to observe the various passions pictured on the faces of the eager crowd?

"Come here, you dunce," says the Pedagogue to his task-ridden pupil — "Come here, — well now, what dost thou chiefly learn in these Articles of thy Belief?" To which the boy with trembling and hesitation answers

— "First I learn ——." "Well, what do you learn?" To which the boy, rendered stupid by fear, replies — "Please, Sir, I don't know." "You saucy blockhead — there, take that, and that, — now you stand there, and never move from the spot until you have committed the whole of the question, word for word, to memory. In an instant give over crying, or I shall give you something to cry for, — what are you sobbing for?" "Please, Sir — I cannot — help — it." "You cannot help — saucy again — I'll make you help it, — there — there — and there, — now you will remember that the rod bites, if you cannot remember your task." True, the boy will probably remember to the day of his death that he was cruelly thrashed because he could not repeat the answer to the question on the Articles of Belief.

A wise teacher, in the place of thrashing his dull pupil, would assist him in completing his task, by first impressing the *ideas* contained in it on his memory. After having read the answer twice or thrice over, he might proceed as follows: "The answer to this question contains three parts. The first relates to God the Father; the second to God the Son; and the third to God the Holy Ghost. Let us now break down the ideas contained in the first part. In whom have we to believe?" "In God the Father." "What is God here said to be?" "He is said to be the Father." "What have you to do in reference to God the Father?" "I have to believe in Him." "What did God the Father do for you?" "He made me." "What did He make besides?" "He made all the world."

Proceeding in this way, the judicious teacher might analyse the whole of the answer; after this is done, the pupil would probably find little difficulty in committing it to memory.

7. *The memory should be cultivated in relation to common things and every-day events.*

The most ordinary and trifling occurrences may be made a source of intellectual improvement: as the habits of animals, or the manners of a people; the construction of articles of furniture and clothing; the structure of a feather, a leaf, or a flower: the mode of building houses, or the making of a pin; and so on.

The difference of information found amongst men does not depend so much upon the number of sights which they may have witnessed, as upon the remembrance of the ideas which these sights are calculated to suggest. Mr. S. never goes a journey, no matter how short, without being able to amuse his family by relating to them some incident, or to describe to them something new. "I don't know how it is," says Mr. B., who had travelled over the world for the mere sake of locomotion, "that my friend Mr. S. finds so much to talk about. He cannot go a journey of a dozen miles, without having had adventures enough to serve a man for a lifetime; for my part, I have visited most of the great cities in the world, but I can hardly get people to listen to my stories." The fact is, Mr. S. was an observing man, and never allowed an opportunity to slip without storing his memory with useful facts; with him every new event became the nucleus of a new series of thoughts.

8. *Instruction should be given on a regular and connected plan.*

Every lesson should have its proper time assigned to it, and it should always be given at that time. A subject should never be taught by fits and starts; for nothing so much enfeebles the recollection as sudden leaps from one branch of knowledge to another. When the foundations of one science are fairly laid, then another one may be commenced; but a schoolmaster, like the blacksmith, should never have too many irons in the fire. "Nothing," says Abercrombie, "appears to contribute more to progress in any intellectual pursuit, than the practice of keeping one subject habitually before the mind, and of daily contributing something towards the prosecution of it." Important subjects of knowledge, having thus had time for their roots to spread themselves in the soil, become as it were incorporated with the mind itself.

II. *The memory is strengthened by all those exercises which tend to cultivate the habit of attention.*

We have already explained some of the most important artifices which may be employed in the cultivation of the habit of attention; the following, however, deserve especial notice in relation to the faculty of recollection.

1. *Interrogate your pupils upon what they may have read.*

2. *Get your pupils to put questions to each other, at the end of a lesson; and also to talk together, after school hours, about the subjects of the day's instruction.*

3. *The pupils should write,* IN THEIR OWN LANGUAGE, *what is most important for them to remember.*

These notes should be neatly and methodically written, — they should not be mere extracts from books, or verbatim reports of lessons.

4. *Make your pupils* FAMILIAR *with important principles and results.*

It is not sufficient for your pupils simply to remember important principles and results, — they should remember them perfectly, that is, in such a way as it would be impossible ever to forget them.

"James," a teacher might say to his pupil, "have you learnt the fourth line of your multiplication table yet?" "Yes, Sir, — I said it to you yesterday." "It is true, my boy, you said it. but it was done with some hesitation. You must learn it so thoroughly that nothing can put you out when you are called upon to repeat it. Now you go on with the fourth line, while I repeat the fifth, and we shall see whether you put *me* out, or I put *you* out."

As a matter of course, James is put out; whereupon the teacher might go on to say, — "Now I have put you out." "Well, Sir, but I could have said it correctly if you had not jarred with me." "Exactly so. But do you think that I could put you out in repeating the alphabet? — let us try."

"Here. you see, I cannot put you out, because you have learnt the alphabet perfectly. Now it is equally important that you should learn the multiplication table perfectly."

CHAP. V.

CULTIVATION OF THE INTELLECTUAL FACULTIES, CONTINUED.— ON THE CULTIVATION OF IMAGINATION AND TASTE.

THERE is no faculty of the mind which requires more careful culture than that of imagination. When properly regulated and directed, it may be made to contribute to the development of all that is noble and estimable in our nature. It forms an essential element of inventive genius. By imagination we are enabled, as it were, to place ourselves in the situation of others, and to sympathise with them in their distress, or to participate in their sorrows. A man deficient in imagination, however estimable he may be in his general conduct, is usually unsocial, illiberal, and selfish. On the other hand, a person with a wild, misguided imagination, occupies his mind in the pursuit of idle dreams and delusions, to the neglect of all those pursuits which are calculated to ennoble a rational being. The imagination should always be kept under the control of reason, and it should never be allowed to wander too long at discretion, amid beautiful and fallacious scenes, so as to impair the judgment. The unrestrained indulgence of imagination often exercises an enfeebling influence over the other powers of the intellect; but a properly regulated imagination gives strength to all the other faculties, and adds a charm to existence.

"His the city's pomp:
The rural honours his. Whate'er adorns
The princely dome, the column, or the arch,
The breathing marbles, or the sculptured gold,
Beyond the proud possessor's narrow claim,
His tuneful breast enjoys. For him, the Spring

Distils her Dews, and from the silken gem
Its lucid leaves unfolds: for him, the hand
Of Autumn tinges every fertile branch
With blooming gold, and blushes like the morn.
Each passing hour sheds tribute from her wings;
And still new beauties meet his lonely walk,
And loves unfelt attract him. Not a breeze
Flies o'er the meadow—not a cloud imbibes
The setting Sun's effulgence—not a strain
From all the tenants of the warbling shade
Ascends, but whence his bosom can partake
Fresh pleasure, unreproved."

To cultivate the imagination, we should exercise it on legitimate objects, and this should be done in harmony with the development of the other powers of the mind. The imagination is exercised — (1) By fictitious narratives; (2) By compositions of the poet and the orator, addressed to the passions; (3) By sallies of wit and humour; (4) By works of art addressed to the sense of the beautiful.

The man who excels in all, or any, of these productions of imagination, is said to have an inventive genius; but it is obvious that this must depend quite as much upon the strength of the faculty of reason, as upon that of imagination. Geometers and scientific discoverers are often much indebted to the fertility of their imagination. Persons of extraordinary power of imagination are not unfrequently deficient in judgment. Why? certainly not from any want of harmony between these faculties, but rather from the want of a proper education; for a man of philosophic intellect must have a vigorous imagination: the genius of the poet and that of the mathematician are more nearly allied than people generally suppose.

I. *The picturing style of teaching* (described in relation to the cultivation of memory) *is one of the best means of developing the imagination of children.*

Very few of our works of imagination are simple enough for the comprehension of a child, — the sentences in them are too long and involved, and the figures and analogical phrases are too far beyond the range of his experience. We cannot expect authors (who generally care more for their own fame than for the improvement of their readers) to put in print all the little and apparently trifling things which they would say to a child. An experienced teacher, on the other hand, naturally clothes his ideas in short pithy sentences, and draws his illustrations and figures of speech from the things with which his pupils are most familiar: he will frequently analyse the figures or analogies which he employs, so as to render their appositeness more vivid and apparent, and to show the difference between a metaphor and an analogical phrase; and above all things, he will constantly endeavour to inspire his pupils with a love of nature, and to kindle within them the sentiment of beauty. When he has occasion to call the attention of his pupils to the aspect of the morning sky, he speaks of "the blushing morn," or, it may be, "the rosy morn;" if anything comes suddenly into his mind, it "flashes" upon him; if he draws a picture of an extensive forest, he speaks of "the trackless woods;" if he makes a comparison between imagination and reason, he speaks of fancy's *flash* and reason's *ray.* He speaks of reason as the *rudder* of the soul, which guides us through the stormy sea of life; of hope as the *anchor* of the soul; of religion as the *great pillar* of the state; of remorse as *the never-dying worm* which gnaws the vitals of its victim; of crime as a *loathsome monster,* and virtue as a *lovely angel* clothed in light; of the *darkness* of ignorance, and the *light* of knowledge; of old age as the *autumn* of life, when all that is lovely withers and decays; of the *whisper* of the breeze, and the *roar* of the tempest.

II. *The imagination of children is cultivated by simple pieces of poetry, or by prose compositions of taste and feeling.*

Simple good poetry delights the ear of children, at the same time that it elevates their character; and even the harmony of elegant prose, if not beyond their comprehension, will melt their tender souls. The best books for children are those which contain simple phrases of beauty, which turn on figures that depend on points of harmony or analogy between the physical and the moral world. "Pilgrim's Progress" is one of the best books for children of ten or twelve years of age. Children should never be allowed to read poetry which they cannot understand, far less to commit it to memory. How matter-of-fact a poetical conception becomes after it has been profaned, day after day, by senseless repetitions! How many of our intellectual pleasures have been marred, by our having had the language of poetry impressed upon our memories, at a time when we could not realise its import! Rhetorical readings, in schools, are something like the exhibitions of the common phantasmagoria — things to laugh at. Teachers commit a gross mistake when they attempt to bring the higher faculty of imagination too soon into play; just in the same way as many persons lose at chess, by moving their queen too early in the game. Every faculty must be fully developed before the infant soul can spread its wings and fly towards the higher heaven of poetry. True poetry is the holy of holies of the intellectual tabernacle, into which no one should enter until all his faculties are matured and consecrated.

III. *Fables and simple tales are amongst the best means of cultivating the imagination of children.*

Children must romance, whether we permit them or not, — it is one of the most uncontrollable laws of human nature. Good fables and tales always contain instruction, — they turn facts into poetry, and instruct the reason through the imagination. Some little stories contain, in an unobtrusive form, more practical wisdom than many learned homilies. Who would wish to forget the story about the fox and the grapes; or the dog and the shadow; or the shepherd boy and the wolf; or the dog in the manger; or the cock and the diamond;

or the lion and the mouse; and so on? Nothing affords children a more sparkling entertainment, than to listen to the parley between the lion and the ass, or between the fox and the crow; while each of them adheres to its character with dramatic strictness, each, at the same time, personates some moral quality. The perception of this analogy leads, in the most pleasurable manner, to the cultivation of abstraction and reason.

What child does not read the Arabian Nights' Entertainments with the most lively emotions? Children like to transport themselves, on the wings of imagination, from the cold and sober realities of our northern clime, to the warm and romantic scenes of oriental climes; with their glittering caverns and golden palaces; their genii and their wonderful lamps and rings; their brilliant skies and gorgeous flowers.

> "Let Fiction come, upon her vagrant wings
> Wafting ten thousand colours through the air,
> While, by the glances of her magic eye,
> She blends and shifts at will, through countless forms,
> Her wild creation."

Good tales contain nothing really deceptive; for a child, with a properly regulated mind, knows perfectly well when he passes the boundary line which separates the region of fiction from that of facts. The very worst tales are those which adhere too rigidly to every-day scenes and events, and inculcate religion and morality with all the mock solemnity of a theological primer. Those very pious, truthful, sermonising tales (such as Peter Parley's), outrage the patience of children, and really defeat the end which they have in view. How can the soul of a child approach its God, clothed in the garb of fiction!

None of our modern novels are sufficiently adapted to the juvenile mind; they are too long; their stories, for the most part, are neither simple enough, nor romantic enough; and besides, they generally pre-suppose a knowledge of human nature and character, which boys below fourteen years of age cannot possibly possess.

We should like to see a few novellettes written after the fashion of Waverley, or The Last of the Mohicans, but rendered somewhat more infantine in the characters described.

No tale should do any unnecessary violence to the feelings and sympathies of children : if the story tells of hideous wild beasts in pursuit of some little innocent child, they should always at last meet with a proper punishment; or if it describes dismal dungeons or deep caverns, some way out of them should always be found, leading to celestial scenes of loveliness and enjoyment; or if it relates the adventures, by sea and land, of some tameless being, he should always at last find a quiet and happy home. We do not appear to have made any advance in this kind of literature, at least for the last quarter of a century. Hans Andersen's fairy stories of the Flying Trunk, the Wild Swans, &c., are very much inferior to our old oriental tales : what modern story of adventures can be placed by the side of our old and dear friend Robinson Crusoe ?

IV. *The sentiment of the beautiful, in children, should be cultivated by drawing and music.*

Children should be taught drawing and music, almost as soon as they can speak. They should be early led to copy the most beautiful forms, and to sing the sweetest songs. Whatever is insipid, or deformed, should never be placed before them for imitation. The sentiment of taste should be constantly cultivated, by directing their attention to whatever is captivating in nature, or beautiful in art. The cultivation of taste not only affords us a refined source of pleasure, but also, somehow or other, gives force and acuteness to the moral sense.

CHAP. VI.

CULTIVATION OF THE INTELLECTUAL FACULTIES, CONTINUED.—ON THE CULTIVATION OF REASON AND JUDGMENT.

REASON is that mental faculty whereby we distinguish truth from falsehood. When we duly exercise this faculty, we compare facts with facts, and events with events, and from their relations and bearings we deduce certain conclusions. We say that a man possesses a sound judgment, when he judges correctly of the relations of facts, events, or circumstances, and gives to each its due amount of influence in the conclusions, or deductions, which he makes. Reason is, in a certain sense, opposed to imagination, inasmuch as it deals solely with facts and realities. Reason is distinguished from simple memory, by which facts or events are merely connected by the laws of association, without any regard to their natural or philosophical relation. Reason, in a well regulated mind, holds the mastery of all the other faculties: it gives strength and precision to every one of them, and harmonises and regulates their operations as a whole; as we have already shown, it especially improves the memory, and checks any unhealthful exuberance of imagination. No faculty in our nature is more susceptible of cultivation than reason; and the neglect of its cultivation is attended with the greatest possible evils, as well to the individual as to society at large. No doubt, there are original differences in the power of reason, but we have no hesitation in stating, that the chief source of the differences in this power found amongst men, is to be traced to culture and discipline. When we neglect the cultivation of the reason of young persons, their minds become engrossed by trifles, or carried away by the wild freaks of imagination; and the most sacred and momentous opinions are either treated with unbecoming levity and indifference, or accepted without thought or reflection. Such persons readily become the victims of sophistry, or the willing slaves of superstition and bigotry. They have not the power, because the habit has not been cultivated, of giving a full and candid examination of all the facts which ought to influence their opinions in any subject of inquiry. Such persons never pursue truth for its own sake,—they do not know what it is to yield their minds to the force of truth; and, as a necessary consequence, their opinions are formed from prejudice or passion.

Reason is, of course, aided by other mental faculties, such as memory, attention, conception, and abstraction, but especially by attention and conception. These two faculties, as we have already shown, are strictly voluntary faculties, and therefore may be greatly strengthened and developed by exercise and habit. A vivid conception of all the parts of a subject of investigation, is the first great step gained in the process of inquiry.

It has not been considered necessary, in what follows, to make any distinction between an act of judgment and an act of reason. Our higher kinds of judgment seem to involve all the essential elements of a process of reasoning.

The following general rules may be laid down for cultivating the reasoning powers of children.

I. *The minds of children should be first exercised in easy processes of reasoning, adapted to their state of intellectual development. Their reason should be first exercised in the discernment of the relations, connections, tendencies, and analogies of familiar facts.*

Until a child has some knowledge of facts and effects, he cannot inquire into principles or causes. Our first steps in the process of reasoning are observation and comparison, then follow deduction and generalisation. A child is capable of forming conclusions long before he can put his reasoning into language. The teacher should be in no haste to break the spell of this silent—this truly ideal—process of reasoning; it is better that ideas—conceptions—judgments—should precede language, for the formality of language too often casts a blighting shadow over what might otherwise have been a glowing vital conception. But this solitary communion of a child with nature cannot always go on; it is proper that the child should be for a time cast upon the bosom of nature; but after the nursling has attained a certain stage of spontaneous development, it is necessary that he should be able to express his ideas in language, in order that he may profit from the results of the experience of others. Hence it follows, that the vocabulary of children should be gradually enlarged with the enlargement of their ideas or *real* knowledge. Words become a hindrance to reasoning, when the vocabulary of the child exceeds his ideas. This we cannot help regarding as one of the greatest evils in our present systems of education; and we are sorry to observe, that men high in authority have recently given, indirectly at least, their countenance to the evil, by exacting a knowledge of the letter, rather than the spirit, of certain subjects of instruction,—such as religion, geometry, arithmetic, and algebra.

The reason of children is frequently misled by the erroneous use of words. We should constantly encourage them to explain their views and opinions, in order that we may rectify their errors. Some people do not care what absurdities they utter, in reasoning with children; they do not hesitate to talk to them about things which are far above their comprehension, and they have always a ready explanation to give of matters involving the greatest mystery. Such tutors fill the young mind with errors and prejudices, which years of training may fail to eradicate; for it is often more difficult for us to unlearn what is false, than it is to learn what is true. To judge whether a subject of reasoning is within the comprehension of a child, we should consider whether the facts or events, upon which it is based, are within the range of his experience.

Reasoning must not be rendered a task, or conducted in so formal a manner as to weary the mind of the pupil;

the exercise of his reason must be spontaneous. We should give him the facts and materials for reasoning, rather than make a direct demand upon his reason. A desultory style of presenting those facts will best secure our purpose; for it is a law of the human mind, that while we can achieve but little in the higher processes of reasoning, without the strictest observance of order,—in the first steps of reasoning, on the contrary, we seem to derive the most healthful excitement from the very absence of order. Every experienced teacher knows this to be true, and unconsciously acts upon this conviction. The reasoning powers of a child are exercised whenever we put the question *why*, or receive the answer *because*. The higher principles of a science should never be taught before the pupil has been made acquainted with the relations and analogies of the most familiar facts. But many teachers, for the sake of following what they conceive to be a logical order, or, it may be, the arrangement given in their text-books, reverse the natural order, and teach the most abstract and least attractive things first.

Mathematical subjects afford one of the best exercises for the reasoning powers. Mathematical reasoning is simple, and free from all uncertainty; this depends chiefly upon the following circumstances:—

1. Nothing is taken for granted or on mere authority; for its principles or reasoning are axioms of self-evident truths.

2. Its proper objects are the relations of numbers, lines, and spaces, things which are cognisable by our senses, and which can be defined and measured, with a precision of which the objects of no other kinds of reasoning are susceptible.

The earliest conceptions of a child relate to form and number, and they are the first which their minds are capable of viewing abstractedly: hence, the elements of arithmetic, algebra, and geometry should be amongst the very earliest subjects of study, for the purpose of developing the reasoning powers. Mathematics, however, like other first subjects of study, should be taught progressively, avoiding as much as possible the formalities of technical demonstration; and principles should always be taught in connection with their applications.

It is a gross error to suppose, that a pupil will have the power of applying abstract principles, merely because he is able to demonstrate the truth of these principles. A knowledge of Euclid is one thing, and the employment of geometrical theorems, in the business of life, is another. The bringing of familiar facts and abstract principles into apposition is not only attractive to the young mind, but also exercises the reasoning powers in a way which no other subject can do. Who does not remember the pleasure that he felt, when he saw the doctrine of similar triangles applied to the finding of the height of a tower, by means of the shadow of a stick?

Although the mathematical sciences may form one of the best initiatory trainings of the reasoning powers, yet it is comparatively inefficient in giving that higher finish and development to the powers of reason. It only exercises the mind in appreciating one kind of evidence,—namely, *mathematical evidence.* Some other subject, therefore, should be adopted for the purpose of developing the reasoning powers of children in relation to *moral evidence.*

These branches of knowledge* may give a false direction to the mind, if they are not taught with caution, and in connection with *moral science.* The certainty and peculiar nature of mathematical science, often inspire the disposition to demand the same kind of demonstration in other points. The wonderful extent to which we can trace and imitate the operations of nature, tempts us to rest on second causes, and forget that Power which is necessary to *establish* and *maintain* the laws which *we only discover.* For this purpose, these studies should not only be conducted in a religious spirit, but should be accompanied and alternated with those which will give another direction to the mind. A pupil thus learns much of the nature of moral *evidence*, and moral relations, and is accustomed to employ these, as well as mathematical demonstration, as a part of his series of thought, and as a sufficient ground for his conclusions.

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* Woodbridge.

On this subject Abercrombie observes, "Notwithstanding the high degree of precision which thus distinguishes mathematical reasoning, the study of mathematics does not, as is commonly supposed, necessarily lead to precision in other species of reasoning, and still less to correct investigation in physical or mental science. The explanation that is given of this fact seems to be satisfactory. The mathematician argues certain conclusions from certain relations of quantity and space, which are ascertained with absolute precision; and these premises are so clear, and so free from all extraneous matter, that their truth is obvious, or is ascertained without difficulty. By being conversant with truths of this nature, he does not learn that kind of caution and severe examination, which are required in other sciences, for enabling us to judge whether the statements on which we proceed are true, and whether they include the whole truth which ought to enter into the investigation. He thus acquires a habit of too great facility in the admission of data or premises, which is the part of every investigation which the physical or mental inquirer scrutinises with the most anxious care, — and too great confidence in the mere force of reasoning, without adequate attention to the previous processes of investigation on which all reasoning must be founded. It has been, accordingly, remarked by Mr. Stewart, and other accurate observers of intellectual character, that mathematicians are apt to be credulous, in regard both to opinions and to matters of testimony; while, on the other hand, persons, who are chiefly conversant with uncertain sciences, acquire a kind of scepticism in regard to statements, which is apt to lead them into the opposite error."

The physical and mathematical sciences are full of simple facts and principles, which are highly calculated to cultivate the reasoning powers of children. History, too, if properly taught, may be made a great instrument in the cultivation of their reasoning powers: not that history, which merely relates the dull dry detail of events in their chronological order, and gives more prominence to the installation of a monarch, than to the discovery of a physical law, or to the advent of a great man whose soul is destined to rule the world of philosophy: not that history, which perseveringly follows the blood-stained foot-prints of warriors, or the chicanery of crafty little-souled statesmen, or the various ramifications of the petty schemes of ambitious autocrats, who fret their day upon the stage of existence, then die and leave no sign behind them: not that history, in short, which ignores the philosophy of history;—but that history which gives the record of really great events, which follows the development of society, marks the relations of events to each other, and resolves them into epochs. The child will thus be taught to study the nature of moral relations and moral evidence. In the same manner we should like to see language and literature taught.

In all these subjects, the teacher should lead his pupils to distinguish between the relations of facts and events which are merely incidental, from those that are fixed and uniform.* From the relations of familiar facts and events,

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* Twenty years ago, when amateur teachers were few, the writer of this work gave lessons on the science of common things (or what he called "science at home") to an evening class of boys, varying from twelve to fifteen years of age.

These lessons were illustrated by simple and striking experiments, made with apparatus, constructed, for the most part, out of the ordinary articles of household use. The subjects selected for instruction, were not only useful in themselves, having a relation to the occupations of life, but also so simple as to be within the comprehension of his young pupils. Recondite facts of science, however useful in their remote applications, were generally avoided, when they did not admit of graphic or experimental illustrations.

The following is a list of the subjects on which these familiar lectures were given:—

What is the best kind of gravel for making a path? The properties of the lever shown by a rod balanced upon the edge of a book. The best way of making a fire. How a candle burns; and why you should not take the snuff off too close. Why the smoke rises in the he will frequently rise to the illustration of general principles; at other times, he will descend from the general principles to the familiar facts or events which illustrate them. But before children are taught any systematic course of study, they should be led to reason and to

chimney; and how a smoking chimney may be, to a certain extent, cured. To explain the use and construction of a wheel-barrow. How breathing and flame vitiate the air; and how pure air should be supplied to apartments. Bad smells are not only disagreeable, but they carry with them the seeds of disease and death: how bad smells may be prevented: importance of cleanliness; of drainage; and of good dwelling houses. How to sink a well. How to make a pump. How to economise labour. How to economise food, and to preserve common articles of use. How to preserve health: you should live upon plain wholesome food: you should perform some physical labour: your clothes should be adapted to the season, and to the state of the weather. Where the water of the river Ouse comes from, and where it runs to. And so on.

These lessons on common things were productive of the most satisfactory results. The boys were so interested in the lessons, that they would, at any time, leave their games to attend the class. Many of the parents did not, at first, quite understand what their children had to do with science; but when they found that the teacher had been explaining how to make a fire, how to prevent the chimney from smoking, &c., they became as much interested in the lessons as their children — and thus the parents speedily became powerful auxiliaries in carrying on the work of education. It is true, that some parents stood out for a long time against the new-fangled system,—they merely wanted their boys taught reading, writing, and accounts. Indeed, a mother thrashed her son for asserting, that the teacher had shown him how the earth turned round every twenty-four hours. “Hold your tongue, sirrah! don't tell me such lies,” said this prejudiced mother; “master could never put such a falsehood into your head. Has not the stack-yard stood at the back of our house ever since I was a child, a girl, and a married woman; and does it not stand there still?” But this argument did not carry conviction to the boy's mind, and as a last resource he was thrashed for his obstinacy.

Noble lords, and learned doctors, and newspaper editors, have lately discovered the importance of teaching the science of common things in our schools. And some of them, no doubt, will have their names emblazoned in our blue books, as the great renovators of popular education.

exercise their judgment upon common things, facts, and events.

> "Thus the men
> Whom nature's works can charm, with God himself
> Hold converse; grow familiar, day by day,
> With his conceptions; act upon his plan;
> And form to his the relish of their souls."

The relations of things and events may be viewed in six distinct aspects, viz., relations of character, of degree, of cause and effect, of connection and composition, of analogy, and of law. We shall give a few examples of these different kinds of relation, with the view of illustrating what is here meant.

(1.) *Relations of character.*

All animals with four feet are called quadrupeds: then, a cow must be a quadruped. A fowl is not a quadruped — why? All hot-blooded animals breathe air: then, a horse must be a hot-blooded animal. Transparent bodies can be seen through: then, water is a transparent body, because I can see objects through a glass of water. Acids are sour to the taste, and change vegetable blue colours to red: then, vinegar must be an acid, for I am sure it tastes sour enough, and the drop which Jane let fall on her blue apron has made it red. All quadrilateral figures have four sides: then, a sheet of foolscap paper has the form of a quadrilateral figure. Heavy substances sink in water: then, chalk must be a heavy substance. Inflammable bodies burn: then, coal must be an inflammable body. The particles of a fluid body readily move amongst themselves: then, mercury must be a fluid body. Metals have a peculiar lustre, called the metallic lustre, like gold and silver; then, copper and lead must be metals. Artificial substances are made by man: then, woollen cloth must be an artificial substance. A natural substance is produced by nature, without the aid of art: then, wool is a natural substance. Bodies like the air, which support flame, are called supporters of combustion : then, chlorine must be a supporter of combustion, for a candle burns in this gas.

(2.) *Relations of degree and proportion.*

John's shoe is too small for Henry's foot ; then, the child will readily make the deduction — Henry's foot must be larger than John's. Our dog is larger than the cat : then, a hole through which the dog can just go must be larger than a hole which the cat can just go through. I cannot reach to the top of the door : then, the door is higher than I am.

I can lift the chair, but I cannot lift the table : then, the table is heavier than the chair. James can push the sofa along the floor, but he cannot carry it : then, it is easier, that is, it requires less force, to push the sofa along the floor than to carry it. I cannot lift that stone, but I can easily overturn it : then, it requires less force to overturn a heavy body, like the stone, than it does to raise it up or lift it.

Thomas takes an hour to walk from Charing Cross to Chelsea, whereas I can walk over the distance in three-quarters of an hour : therefore, I walk faster than Thomas.

Yesterday the water in the kettle took three-quarters of an hour to boil, but to-day it has only taken half an hour : then it follows, that the fire is hotter to-day than it was yesterday. The sun is longer above the horizon in summer than he is during winter : hence, the summer is hotter than the winter. Water never freezes at Bermuda : then the climate of Bermuda must be warmer than that of England.

A body of a red colour can be seen at a greater distance than a body of a blue colour : then, red must be a brighter colour than blue.

The shadow of that tree is longer than the shadow of that house : then, the tree must be higher than the house.

A pound weight of bread is larger in bulk than a pound weight of lead: then, lead must be a heavier substance than bread. Bread floats on water, but cheese sinks in it: then, cheese must be a heavier substance, bulk for bulk, than bread.

Smoke rises in the air, but silk paper falls: then, smoke must be a lighter substance than silk paper.

(3.) *Relations of cause and effect.*

A kettle on the fire will never burn, so long as there is water in it: then, the boiling water, or steam, must carry off the heat. It is warmer during the day when the sun shines than it is during the night: then, the sun must be the source of heat. A crow on the top of St. Paul's Cathedral does not look larger than a sparrow: then, the height of St. Paul's must be very great. When the fire burns briskly, light pieces of paper are carried up the chimney: then, there must be a current of air rushing up the chimney. When sealing wax, glass, or brown paper, is rubbed with a dry piece of flannel, electricity is produced: then, friction generates electricity. Snow flakes fall in the air, soap bubbles rise in the air: then, snow must be a heavier substance than air, and soap bubbles must be lighter than air.

The soap bubble is a heavy fluid, inflated with hot air: then, this hot air must be the thing that makes the soap bubble lighter than the surrounding air. After a little time, the soap bubble bursts; does it burst inwards or outwards? inwards — why? The soap bubble moves from the shade to the sunshine, — it bursts, — why? inwards or outwards? outwards — why? The soap bubble is globular in its shape — why?

In order to roast a joint of meat, it is made to turn before the fire — why? the meat is turned round in order that every part of it may be properly roasted. A register stove throws out more heat than a common fireplace — why? because the register stove reflects the heat of the fire, or, in other words, it throws the heat of the fire into the room. Woollen clothes keep our bodies warm in cold weather — why? because woollen clothes prevent the heat from passing out of the body, or in other words we may say, woollen is a bad conductor of heat. Nature has clothed the lower animals either with wool, hair, or feathers — why? nature has done for them, what the reason of man enables him to do for himself. In igniting a fire, we put shavings and wood at the bottom of the fire-place, and the coals above them — why? Prudent people take their principal meal about the middle of the day — why? Men work during the day, and sleep during the night — why? When the sky is cloudy, we are likely to have rain, but when the sky is clear, we never have rain — why? Ice feels cold, boiling water feels hot —why? because the ice is colder than our bodies, and the boiling water is warmer. The iron part of a spade feels colder than the wooden part — why? because the iron conducts, or conveys, the heat from our bodies more rapidly than the wood. The handle of a coffee pot is usually made of wood — why? Deal floors are warmer than brick floors — why? In frosty weather, the water from the clouds falls in the form of snow or hail — why? With us the north wind is usually colder than the south wind — why? At noon-day, when the sun shines, our shadows fall towards the north — why? The snow falls upon the mountain tops, more than it does in the valleys or plains — why? The west wind with us is usually accompanied with rain — why? because the west wind passes over the Atlantic Ocean, and therefore comes to us charged with moisture. The east wind is dry and parching — why? Thunder storms generally take place at the close of summer — why?

(4.) *Relations of connection and composition.*

The earth on which we live is globular: then navigators should be able to sail round it. When a body can be seen a long way off, it must be very large: then, Windsor Castle must be very large, for it can be seen from Richmond Hill! — then, the moon must be very large, for we know that she is far, far above the clouds. A square whose side is two feet may be divided into four small squares one foot in the side: then, a square which is two feet in the side, must be four times the size of a square which is one foot in the side. When hydrogen gas burns in oxygen, water is formed; then water must be composed of hydrogen and oxygen. When phosphorus is burnt in oxygen, a white substance is formed, called phosphoric acid: then, phosphoric acid must be composed of phosphorus and oxygen. When sulphuric acid is poured upon chalk, carbonic acid gas is given off: then, chalk must contain carbonic acid. When red lead, or oxide of lead, is heated, oxygen gas is given off, and metallic lead is left behind: then, red lead must be composed of lead and oxygen. Drunkards always shorten their days: then, a drunkard must be guilty of self-murder or suicide.

(5.) *Relations of analogy.*

A piece of cork rises in water in the same way as a balloon rises in the air; or as smoke rises in the air: as the cork is lighter than the water, so the balloon is lighter than the air, bulk for bulk. When a piece of lump sugar is placed in a spoonful of water, the water rises up the pores of the sugar, in the same way as water rises up the pores of a sponge, or as water rises up a fine tube, or between two plates of glass, placed near to each other. Water will dissolve sugar, in the same way as water will dissolve salt, or as spirits of wine will dissolve camphor. If a soap bubble be twirled round, just before it is thrown from the bowl of the pipe, it will revolve and become flattened at its poles, by its rotation on its axis: when a mop is twirled round, it assumes a somewhat flattened shape, in the same way as the whirling motion of the earth has caused its equatorial parts to swell out. The steam from boiling water, by its elastic force, sometimes raises the lid of the kettle; in the same way as the steam of a steam engine raises the piston or plug in the cylinder. A watch has had a maker; in like manner the world has had a Creator. As a magnet attracts iron, so somewhat in the same manner the sun attracts the planets in the solar system. As the contrary poles of a magnet attract each other, so bodies electrified in contrary ways attract each other; and as like poles of a magnet repel each other, so bodies electrified in the same way repel each other. As bodies in front of a fire become warmer than those at the sides, so in like manner places at the equator more directly under the sun's heat, become warmer than those places towards the poles, where the sun's heat glances obliquely upon them.

What qualities have sealing wax, sulphur, and pitch in common? they are all inflammable, fusible, brittle when cold but adhesive when melted, and generate the same kind of electricity by friction. What qualities and points of structure have carnivorous animals in common? An iron hoop is elastic, — name some other bodies analogous to the hoop in this respect. A bullet is a sphere, — name some other bodies that are spherical. What properties have all bodies in common? weight, &c.

When a child learns, for the first time, some new property of a thing with which he is quite familiar, he is taken by that sort of surprise, which affords him the highest pleasure, and which forms one of the most powerful incentives to intellectual activity. Thus, for example, a boy readily admits that the air is a transparent fluid; but when he is shown that it has weight, like lead, or any other material substance, he is taken by surprise — a surprise which is nearly allied to doubt — and he is thereby prepared to give an earnest attention to any experiments we may make upon the subject.

(6.) *Relations of law, depending on inductive reasoning.*

When iron is heated, its bulk is increased; — when water is heated, its bulk is also increased; — and the same holds true with respect to any other substance which has been tried: then, one general law of heat is, that it expands all bodies. Sound travels over eleven hundred feet in one second; twice eleven hundred in two second; thrice eleven hundred feet in three seconds; and so on: then, sound travels at a uniform rate.

Misery, disease, and death always follow drunkenness, dissipation, and all such crimes: then vice and misery are inseparably connected. Liars and thieves are never trusted; a truthful and honest person is always esteemed: then, honesty must be the best policy.

A body, let fall from a tower, falls sixteen feet in one second, four times sixteen feet in two seconds, nine times sixteen feet in three seconds, and so on: then, the spaces passed over by falling bodies increase as the squares of the times.

A ball struck along a floor, moves in a straight line; the harder the blow the further the ball moves; then, something must cause the ball to stop—what is it? is it the roughness of the floor (the friction of the floor), or the blowing of the air? if the floor were smoother would the ball move further? would the ball stop if there were nothing tending to destroy its motion? let us try,—has any body tried this? Yes, my child, we may suppose a teacher to say, this has been tried, and it is found that the more we remove the resistances of friction and the air, the farther and farther the ball will move: then, if these resistances could be removed altogether, what should we expect? Why, that the ball would never stop, that is to say, it would move on and on, in a straight line for ever, if it did not meet with any external force or resistance to stop it.

(7.) *Relations of law, depending on deductive reasoning.*

The force of gravity decreases as the squares of the distances: then a body will be lighter at the top of a mountain than it is at the sea shore: then, a pendulum will vibrate slower at the top of a mountain than it will do at the sea shore. The atmosphere is an elastic fluid: then, the air at the top of a mountain is not so dense as it is on the plain. The temperature at which water boils increases with the pressure upon it: then, water will boil at the top of a mountain at a less degree of heat than it would do at the sea shore. Rough bodies radiate, or throw out, heat more rapidly than smooth polished bodies: then, other things being the same, hot water in the kettle will become sooner cold than if it were in a polished metal tea pot. The force of the wind makes a kite fly: then, a kite must fly best in windy weather. When a flame is applied to a mixture of street gas and atmospheric air, it explodes: a lighted candle should never be taken into a room where there is an escape of gas. The pressure of water is in proportion to its depth: then, the strength of embankments should be in proportion to the depth of the fluid which they have to sustain: then, the strength of beer barrels should be in proportion to their depth. The intensity of light decreases as the squares of the distances increase: then, the light of a candle at twenty feet distance will be one fourth of what it is at ten feet.

The height to which water may be raised, by the common pump, is in proportion to the pressure of the surrounding air: then, the common pump will raise water to a greater height on the plain, than it will do on the top of a mountain. The resistance of fluids to a moving body is in proportion to the squares of their velocities: then, there must be a considerable loss of power when railway carriages move with great velocities. The resistance which friction presents to a moving body is the same for all velocities: then so far as friction is concerned, there is no loss of power in moving railway carriages at a high speed.

II. *After the reasoning powers have been exercised in the manner just described, the process of reasoning should be analysed; and this should be done in connection with simple examples.*

It should be shown that every process of reasoning consists of two parts — the premises and the conclusion — the thing or things which we take for granted, or assume to be true; and the proposition which we have to establish.

The premises consist of; (1) First or intuitive truths; (2) Propositions and principles, either taken for granted, or which have already been proved; (3) Certain facts, or relations of facts, which we believe to be authentic, and to which our assumed principles are to be in some manner applied.

The conclusion is deduced from the application of the assumed principles to the facts. Here we have not only to assure ourselves of the correctness of the principles assumed, and of the authenticity of the facts, but also to determine whether the principles are legitimately applicable to the facts; for the principles may be correct, and the facts may be authentic, and yet the reasoning may be false, from the want of a true connection between the principles and the facts.

We examine the truth or falsehood of a process of reasoning or argument by the method of the ancient syllogism. Formal logic is of very little use in the discovery of truth, or even in the first stages of school instruction; yet a knowledge of the syllogism will frequently enable a young man to detect the sophistry of an argument, which might otherwise confound his judgment. An intelligent boy of thirteen or fourteen years of age may readily understand the nature of a syllogism.

If I simply say that "the greatest philosophers are mortal, for they are but men;" I reason,— I employ the elements of a syllogism: thus we have,—

First, I employ the general fact,—that all men are mortal.

Second, The special fact, coming under the general class of facts referred to this proposition,— that philosophers are men.

Third, The inference or deduction from this connection, —that philosophers are mortal.

The first is called the ***major proposition***, the second the ***minor proposition***, and the third, the ***conclusion***, or new proposition. Thus, the foregoing reasoning may be put in the form of a syllogism : —

Major Proposition,	All men are mortal,
Minor Proposition,	Philosophers are men ;
Conclusion,	Therefore, philosophers are mortal.

In order that our conclusions may be valid, it is necessary that the major and minor propositions should not only be separately true, but the minor proposition must belong to the class of facts included in the major proposition.

Exercise your pupils in putting simple processes or reasoning (such as those given under the head of relations in the foregoing article) into the form of a syllogism. Require them to name the propositions or principles taken for granted — (are they intuitive, or have they been proved ?) the facts alleged to be true — (upon what evidence do they rest ?) the major and minor propositions — (is the former true without exception ? does the latter come under the former ?) and so on.

Give instances of false reasoning, and call upon your pupils to detect them. Let us give a few examples.

Example 1. Point out the error in the following process of reasoning :

> The diagonals of all parallelograms bisect each other,
> Trapezoids are parallelograms ;
> Therefore the diagonals of trapezoids bisect each other.

Answer. Here the major proposition is true ; but the minor proposition is not true, that is to say, it is not one of the class of facts comprehended by the major ; therefore the conclusion is false.

Example 2. Point out the error in the following process of reasoning: —

All created beings are mortal,
Angels are created beings;
Therefore, angels are mortal.

Answer. Here the minor proposition is true, but the major is not true, for we have no ground for such a belief.

Example 3. Where is the error in the following reasoning?—

All human beings are mortal,
Angels are not human beings;
Therefore, angels are immortal.

Answer. Here, although the conclusion is true, the reasoning is false: for since the converse of a proposition is not always true, we are not entitled to infer that, because human beings are mortal, therefore angels, which are ***not*** human beings, are ***not*** mortal.

III. ***Some of the most common sources of false reasoning should be pointed out.***

1. The admission of alleged facts without a due examination.

James, we may suppose a master to say to his pupil, how do you explain the fact that a steel needle will float upon water?

I don't know, Sir; for steel being heavier than water, I should have thought that the needle would sink in water. In short, Sir, I question the truth of the alleged experiment.

Master. That is just what I should have expected from you (we may suppose the master to say). You were quite right to examine the truth of an alleged fact, especially when it appears to interfere with your previous experience, or at variance with certain general principles which you know to be true. At the same time I shall make the experiment, which establishes the fact, and you will then see, upon further reflection, that the phenomenon is due to the operation of a certain principle, which counteracts the tendency which the needle has to sink in the fluid. Illustrations of this kind may be readily extended by the teacher.

2. Mistaking incidental connections for those that are uniform and constant, or confounding accidental coincidence with causation.

Black ribbon being rubbed with the hand becomes electrified. A child, upon observing the experiment, may naturally enough conclude that the colour of the ribbon is essential to the result, unless he is shown, by further experiments, that the effect is independent of the colour, and that the essential or permanent conditions are, that the substance should be silk, and that it should be perfectly dry.

"This spring, little James was looking at a man who was mowing the grass before the door. It had been raining, and when the sun shone the vapour began to rise from the grass. 'Does the man mowing *make* the smoke rise from the grass?' said the little boy. He was not laughed at for this simple question. The man's mowing immediately preceded the rising of the vapour; the child had never observed a man mowing before, and it was absolutely impossible that he could tell what effects might be produced by it; he very naturally imagined, that the event which immediately preceded the rising of the vapour was the cause of its rise; the sun was at a distance; the scythe was near the grass. The little boy showed by the tone of his inquiry, that he was in a philosophic state of doubt; had he been ridiculed for his questions, had he been told that he talked nonsense, he would not upon another occasion have told his thoughts, and he certainly could not have improved in reasoning."

The best way to improve the judgment of children, with respect to the interpretation of natural phenomena, is to extend their knowledge, and to lead them to make experiments, so that, by the repetition of such experiments, they may discover what circumstances are essential to the production of any given effects, and what are merely accidental or accessory.

3. Assuming the converse of a proposition to be true.

In mathematics nearly all the converse of propositions are true; but in general physics and the business of life, this is far from being the case. Thus, while all gaseous bodies are elastic, all elastic bodies are not gaseous. All horses are quadrupeds; but all quadrupeds are not horses. Angels are immortal; but all immortal beings are not angels. Magnets attract iron filings; but all bodies which attract iron filings are not magnets, for any electrified body will attract iron filings; and so on to numberless instances.

4. Confounding a mere illustration, or an analogy, with a demonstration.

The relation of the times and spaces of a falling body is commonly illustrated by the division of a triangle into a series of little triangles, &c.; but something more is required to raise the character of this illustration to the dignity of a demonstration.

The whirling of a stone is often used to illustrate the law of centrifugal and centripetal forces; but this scarcely advances us a single step in the demonstration of the great law, which regulates the planetary motions. Illustrations are exceedingly valuable in their place; but the pupil should never be allowed to regard an illustration, or analogy, as a ground for dispensing with a full demonstration. He should be led to regard illustrations and analogies as preliminary steps to demonstration.

5. In attaching erroneous or ambiguous meanings to terms; or in using terms in different senses in the course of an argument.

Much false philosophy is based upon the ambiguities of language.

Teachers should carefully rectify the verbal errors of children.

"Turkey is an unhealthy country," said a friend of mine one day to his pupils, "but this is owing more to the want of *precaution* on the part of the people, than to the badness of the climate." The boys did not appear fully to understand what was said to them. "Precaution," said my friend, "that is a hard word for you to comprehend, — what boy will tell me the meaning of this word?" The boys hesitated, — they first stared at their master, and then at each other, but gave no further sign of intelligence, — the case was desperate, — they had got a tickler. My friend then, with the view of ascertaining the full amount of their ignorance, said: — "Now tell me whether precaution is exported or imported." The bait took, for the head boy of the class at once shouted out —"Exported, Sir!" — and, as a matter of course, the answer went the round of the class.

6. When we assume, in a disguised form, the principle which is to be proved.

This is commonly called begging the question.

Or when we take for granted any principle which requires proof.

In proving, for example, that the angles at the base of an isosceles triangle are equal to each other, if we assume that the angles on the other side of the base are equal to each other, we should take for granted a proposition, which is almost equivalent to the one which is required to be proved.

IV. *Some general rules should be occasionally given to children for the conduct of their understanding in the pursuit of truth.*

The following are a few examples of this kind: —

Before commencing any inquiry, strip your mind of all prepossessions, prejudices, or hastily formed opinions, and yield yourself freely and dispassionately to the force of truth. Earnestly seek the truth. Never argue in support of opinions which you do not believe; for the habit of false reasoning distorts and warps the soul, and tends to confound all distinction of right and wrong: let the love of truth be your ruling principle. Remember, that you are responsible, as well for your opinions and judgments, as for your actions and conduct.

> "Majestic truth; and where Truth deigns to come,
> Her sister Liberty will not be far."

Weigh well the validity of your arguments, or, it may be, the accuracy of your processes of investigation. Never form hasty conclusions; always ask yourself, before you have come to a final decision, — Is there no other view of the case which is as feasible as the one which I have taken?

See that your axioms, or first truths, may be fairly ranked as such. You may explain first truths, but you cannot prove them.

Be watchful relative to the authenticity of facts. In the formation of your opinions, and in the regulation of your conduct, give a due weight to all the facts which ought to influence your decision.

Take care that your assumption, or it may be your definition, does not include the truth of the proposition which is to be proved. Remember, that the converse of an established proposition *may* not be true.

Clearly distinguish between an illustration of a truth, and a demonstration of it. Bear in mind, that facts may either illustrate the truth of a principle, or they may prove the truth of it. In reasoning from analogy, inquire whether there exist any points of difference between the analogous cases, which may make the principle of reasoning inapplicable.

ON THE CULTIVATION OF WIT AND INVENTION.

Wit is only a peculiar form of reason: wit is reason exercised in search of grotesque resemblances between things apparently dissimilar. The decisions of judgment, which is another form of reason, are slow — those of wit are rapid; but the heavy thunder clouds of judgment not unfrequently burst forth in the lightning flashes of wit. The passage from the settled gravity of philosophy to the electric gaiety of wit, is easy and not unnatural. Great philosophers have generally been remarkable for their wit. The earliest shoots of intellectual growth are witty. It would be well, if the teacher would try to enliven the dull routine of school duties, by occasional sallies of wit and humour. His example would soon be followed by his pupils, for nothing glances, from mind to mind, more rapidly than the flashes of wit: such intellectual efforts are singularly procreative — one witty idea soon doubles and triples itself. Wit and humour, like gleams of sunshine, shed gladness and joy over a class of children. The great object of Divine benevolence, says the venerable Dwight, is the happiness of His creatures; and he who promotes the happiness of a little child for half-an-hour, is a fellow-worker with God.

Invention, considered with respect to reason, consists in finding out new relations, or in discovering new truths from these new relations, and in putting these relations in such an order, or form, as to show how new truths arise out of them.

If schoolmasters would endeavour to foster the development of the inventive powers of their pupils, we might have fewer learned unproductive drones, but most certainly we should have more inventors. We have known boys to make pulleys, and other kinds of wheel machines, electrical machines, and other sorts of experimental apparatus. Boys soon acquire such a passion for construction and invention, that they would rather spend their market halfpence in the purchase of the materials for construction, than in sweetmeats.

In order to cultivate the inventive powers of children, the teacher, after having supplied them with facts, might occasionally throw out suggestions like the following. Could you make anything of paper to illustrate the construction of the smoke-jack, or the wind-mill, &c.? Can you make a cone, &c., out of card-paper? In how many different ways could you divide the ground floor of a house into three equal apartments? How would you join three pieces of wood together so as to make a model of the principal rafters of the roof of a house? What would be an improvement to the common snuffers, &c., &c.? How would you join, without glue, in the simplest manner, two pieces of wood, so as to form a T square? And so on.

CHAP. VII.

CULTIVATION OF THE MORAL FACULTIES.

Man was originally created after the image of his Creator, in knowledge and holiness: this was absolutely necessary in order that the creature should become the worshipper of the Creator; for we can only have a knowledge of God by the contemplation of His own image as it is reflected from our souls. The fall of man has neither eradicated any principle from his soul, nor implanted any new one. This disastrous moral catastrophe has destroyed the balance of the various moral and intellectual faculties, by giving a preponderance to what we call the malevolent and animal propensities over the intellectual and moral ones. One great object of teaching should be to restore, under the blessing of God, the various faculties of our nature to their first condition of purity and harmonious action, by stimulating the intellectual and benevolent affections, by curbing the undue activity of the selfish and animal propensities, and by directing them to their original ends and objects. There is no principle in our nature, which, under the blessing of God, may not be directed to what is good. In like manner, the fall of man has neither eradicated any law or principle in physical nature, nor given birth to any new or supplemental principle: it merely destroyed the balance of the various laws operating in nature, by giving an undue preponderance to the operation of certain destructive or rather corrective agencies. The storm and the whirlwind, which at present frequently spread havoc and desolation over the earth, and the noisome weeds, which frequently infest the soil, become evils only from their undue preponderance. But the providence of God, co-operating with the labour of man, which can make the wilderness to blossom as the rose, which can make the dark and howling regions of the earth become radiant with joy and gladness, can also illuminate and purge those dark and foul recesses in the human soul, which have become the seat of gloomy and demoniacal passions. The same beneficial influence, co-operating with the better nature of humanity, which can convert whatever is apparently evil, in the external world, into its original usefulness, can also divert the current of our evil tendencies into a right channel. The passions of suspicion, anger, hatred, and revenge, which arm the midnight assassin with the dagger or the poison cup, may be legitimately directed to the detection of error, to the denunciation of vice, or to the punishment of crime. "Woe unto you," says He who had no guile, "Scribes and Pharisees, hypocrites! for ye are like unto whited sepulchres, which indeed appear beautiful outward, but are within full of dead men's bones, and of all uncleanness." The love of self, which, in the form of selfishness, is really the most fruitful source of the moral evils which at present exist in the world, may become the mainspring of religion;—"Why will ye die! O house of Israel." Pride, or the consciousness of power, which often leads us to despise what is humble and to oppress what is weak, may shield us from the meanness of falsehood, or raise us above the contamination of folly. Rashness and temerity, which often result in misery to ourselves, and in discomfort to our friends, may assume the form of that high-toned moral courage, which is one of the most essential elements of true greatness. Ambition, combined with inflexible purpose, which like a giant in its strength tramples upon whatever stands in its path, and ruthlessly sacrifices all that is great or holy at its shrine, may lead us to glory in what is good, and to esteem it a greater honour to be a doorkeeper in the house of God than to be a dweller in the tents of sin. The love of approbation, which, in its vitiated form, manifests itself in a vain and heartless display of our own powers, may, under proper guidance, stimulate us to merit the approbation of the good and great, and above all to seek the approbation of God and our own conscience. The man, whose soul has been expanded by philosophy, and sublimated by virtue and religion, possesses the same faculties as the being whose soul has been cramped and enervated by ignorance, and corrupted and debased by crime. What a contrast between two things possessing the same elements! the one is like the sparkling and indestructible diamond, radiant with all the hues of heaven's own light, the other is like the charcoal,—black, crumbling, shapeless, and worthless. The great business of education, therefore, is not to eradicate any principle of our nature, but to direct all our faculties towards their proper objects,—to foster what is good and to check the development of what may tend to evil.

All the moral faculties, without exception, should be trained from the earliest infancy; for they manifest themselves at a much earlier period than the higher faculties of intellect. "Train a child," says the inspired writer, "in the way in which he should go, and when he is old he will not depart from it." The moral training of a child is, of course, best conducted by his parents, and especially by his mother. Home is the proper sphere of moral training; the earthly parent possesses, in this respect, the delegated authority of the heavenly Parent; and any system of school education which seeks to ignore this heaven-stamped authority, must be bad, not only in its principle, but also inexpedient and erroneous in its practice. But do parents undertake this sacred duty? or are they always willing to perform it in an efficient manner? If parents do not (and we fear that many of them in the present state of society fall far short in this respect), is the teacher qualified, or is he authorised, to undertake the sacred function? The question is difficult to answer, when put in this comprehensive form. At least, however, we may safely say, that he may fairly endeavour, to the best of his abilities and opportunities, to educate the child, placed under his care, in those grand and essential truths of morality and religion, which are recognised by the great body of the people in this country. But the teacher should always endeavour to enlist the co-operation of the parents, in training the moral faculties of their children. There are few parents so far sunk in ignorance and crime, as to remain callously indifferent to the remonstrances of a teacher relative to the future well-being of their own children. What parents would desire that their own moral degradation should be perpetuated in their children? The instinctive and disinterested love of the parent consecrates every moral lesson, which he may give to his offspring. No school teacher can possibly place himself in the same attitude in relation to his pupil. "There is a love of offspring," says the eloquent author of the Natural History of Enthusiasm, "that knows no restrictive reasons; that extends to any length of personal suffering or toil; a feeling of absolute self-renunciation, whenever the interests of children involve a compromise of the comfort or tastes of the parent. There is a love of children in which self-love is drowned; a love, which, when combined with intelligence and firmness, sees through, and casts aside, every pretext of personal gratification, and which steadily pursues the highest and most remote welfare of its object, with the determination at once of an animal instinct, and of a well-considered, rational purpose. There is a species of love not liable to be worn by time, or slackened, as, from year to year, children become less and less dependent upon parental care:—it is a feeling which possesses the energy of the most vehement passions, along with the calmness and appliancy of the gentlest affections; a feeling purged, as completely as any human sentiment can be, of the grossness of earth; and which seems to have been conferred upon human nature as a sample of emotions proper to a higher sphere."

The moral and religious training of children would be greatly advanced, if our clergy would frequently address parents from the pulpit, on the best methods of conducting home education; and also if the teacher, along with the clergyman, would frequently visit the parents of his pupils, with the view of showing them how to proceed with the training of their children at home.

I. *All moral training should be based upon religion.*

Avaunt that heartless secular system of training, which would inculcate moral precepts apart from the sublime and soul-inspiring doctrines of revelation! Begone, with your tape-lines and scissors, we do not want morality doled out to us by the measure! Begone, thou sneering spirit of scepticism, with all your fine-spun moral theories of expediency, brought forward to supplant the sublime doctrine of salvation by faith; you cannot disguise your cloven foot! Begone, from the land of honest old England—Christian England; destroy not the quiet happiness which reigns in her hearths and homes! Back to sceptical France, if you please; if not there, then back to your native hell, and leave God-fearing teachers to do God's work!

Away with those false metaphysics, which would persuade us that the idea of God is too subtle for the mind of a child. Its heartless propounders, no doubt, gauge the capabilities of the virgin soul of the child by their own narrow, sin-scorched natures. A more expansive and practical philosophy tells us that there is no conception which more easily assimilates itself to the infant soul, than the idea of the Creator. The idea of God is directly manifested to us through His Spirit. The Spirit of God, where is it? where is it not? It pervades all matter and all space; but it specially manifests itself in the sanctified human soul, in the form of the third person of the glorious Trinity; and we are told. by Christ, that the kingdom of heaven will be especially composed of little children.

II. *The teacher should, above all things, cultivate the sentiments of veneration and faith.*

Children instinctively venerate what is great and holy; and that teacher is guilty of the grossest impiety, who does not foster and develope, on all fitting occasions, the devotional affections of his pupils. There is scarcely any subject of instruction without having its religious bearing. Besides the direct and positive religious instruction, usually given in our schools, the good teacher will avail himself of every incidental opportunity for inculcating moral and religious duties. The wisdom and goodness of God, as manifested in the works of His hands, afford one of the best means for cultivating the devotional sentiments of children;—the adaptation of the structure of animals to their instinct, and to their habits of life,—the relations of the great physical laws to each other, and to the essential purposes of vegetable and animal life,—the intimate connection between the laws of the physical and moral world,—all these, and many other evidences of divine wisdom and goodness, are highly calculated to foster and develope the devotional sentiments of children.

The love and fear of God should be made the mainspring of all their actions. Children should be taught to do good, because it pleases their Father which is in heaven, and to avoid what is evil, because it offends Him. There is no sure anchor for the human soul but that infantine faith in the love and goodness of God, which exhibits itself in the following forms: faith in God's providence;—faith in His promises, as revealed in His holy word;—faith in His Son Jesus Christ for salvation;—faith in the moral government of God, and that, under this government, society is advancing towards the millennium period, when humanity will have achieved for itself that intellectual and moral emancipation from the thraldom of ignorance, and from the slavery of sin, which prophets have foretold, and of which inspired poets have sung.

Teachers! instruct your children how to pray. Wonderful arrangement of divine mercy! the tones of that feeble child's voice ascend from earth to heaven, and, rising far beyond the visible universe, they reverberate through the mansions of the blessed and reach the ear of Divinity; and God, well pleased with that little child, deigns to answer the prayer! that prayer descends to the lowest depths of hell, and makes the damned to gnash their teeth. Teachers! a poor, guilty child of earth, tells you to teach your children to pray; but the admonition should not come with less force on account of the unworthiness of the being that gives it: inasmuch as you may regard it, should you think proper, as the tribute which an unauthorised layman pays to religion.

III. *Teachers should constantly cultivate the benevolent affections of children.*

The exercise of the benevolent affections affords us one of the purest and highest sources of pleasure. Children should be shown that it is their interest as well as their duty to love one another,—to be kind, forbearing, and forgiving in their tempers,—and to be ever seeking to promote the comfort and happiness of their companions in preference to their own gratification. Tell them, that when we pray to God (in our Lord's prayer) to forgive us our trespasses, that same prayer bases the petition on the assumed fact that we forgive them that trespass against us. But goodness of heart should not only proceed from virtuous impulse,—it should also be sanctified by proper motives: children should be taught to love one another, because love is the fulfilling of the law,—because God is love—because He has manifested His love in their creation, in their preservation, and in their redemption.

The schoolroom should be a happy place. That school is little better than a pandemonium, where the boys are allowed to quarrel and fight with one another. Malice, cruelty, and all vindictiveness of character, are a perpetual source of misery to their possessor, as well as to all with whom he comes in contact: on the contrary, gentleness, forbearance, and mercy, diffuse joy and gladness throughout the whole school.

"The quality of mercy is not strained;
It droppeth as the gentle rain from heaven
Upon the place beneath: it is twice blessed;
It blesseth him that gives, and him that takes!
'Tis mightiest in the mightiest; it becomes
The thronëd monarch better than his crown;
His sceptre shows the force of temporal power,
The attribute to awe and majesty,
Wherein doth sit the dread and fear of kings.
But mercy is above this sceptered sway,
It is enthronëd in the hearts of kings,
It is an attribute to God Himself;
And earthly power doth then show likest God's,
When mercy seasons justice. Therefore, Jew,

> Though justice be thy plea, consider this —
> That in the course of justice, none of us
> Should see salvation! we do pray for mercy;
> And that same prayer doth teach us all to render
> The deeds of mercy."

Good-natured children are always cheerful and happy; and they become a source of happiness to all their companions; but ill-natured spiteful children become the plague-spots of a school,—they make everybody about them miserable. A happy, cheerful disposition, is not only salutary as regards its moral influence, but it is also one of the most indispensable conditions of intellectual progress.

IV. *The benevolent affections, as well as all the other moral faculties, should be cultivated so as to become habits of action.*

We have already explained the importance of establishing right habits of thought as well as virtuous habits of action; we have here only further to reiterate that, in order to establish habits of virtue and religion, the teacher should constantly enforce the performance of all important duties at their proper time and in their fitting place; for it should always be borne in mind, that the neglecting to perform any duty, at the time assigned for it, tends to weaken the habit which we wish to establish.

V. *The teacher must educate the moral faculties of his pupils by his example as well as by his precepts.*

Example bears the same relation to moral science, that experiment does to physical science: you cannot thoroughly teach abstract principles without giving them a tangible form,—"a local habitation and a name." A teacher's life and conversation should, in all respects, become the living form and embodiment of his precepts.

But the discrepancy between our precepts and practice has assumed the form of a common adage,—"Do as I say, and not as I do." The teacher, of all men in society, should be the most watchful. He necessarily impresses the leading features of his own moral character upon his pupils. What an awful responsibility this involves! What a moral power he wields for good or for evil! Each grain of truth or falsehood which he sows in the field of his labour, will multiply itself indefinitely throughout eternity.

No motion or dynamical action can be lost in the physical world; so in like manner, in moral dynamics, the results of our actions will flow on through indefinite ages: what finite mind can investigate that moral formula which shall express the remote bearings of a single example of vicious conduct! Every moral precept given by a teacher to his class, and every act performed by him before his class, will live long after he is dead, and will perpetuate itself a thousand-fold in distant ages.

How awful is the responsibility of the teacher! every wrong word uttered by him, and every improper act done by him, will, as regards its remote consequences, be recorded, again and again, in the doom-book of God, there to stand as damning blots against him till the great day of reckoning!

The thistledown from a single thistle, if left unchecked, will soon spread the weed over a whole district. A single plague-spot is sufficient to give rise to the contagion which may depopulate a city. In like manner. one symptom of moral corruption, in the personal character of a teacher, may be the cause of a moral contagion, which may spread far and wide, and influence the destinies of future ages.

The teacher should beware of acquiring any habits calculated to provoke censorious remarks. Children are keenly alive to any defects or imperfections in their teacher. It is almost impossible for any teacher to appear what he really is not, before his pupils; his weaknesses are sure to become a matter of ridicule, and his faults a subject of censure; and it would be well if the evil stopped here; but it does not, for children insensibly, and even in spite of their better feelings, imitate the manners and conduct of their superiors in knowledge and station: to laugh at folly does not shield us from its attack, and to animadvert upon what is vicious, is no guarantee that we are raised above its contamination. We have sometimes heard conversations like the following going on amongst school-boys:—

"I say, Tom, what a fine white choker teacher has got."

"Do you think that he washed his face this morning?"

"To be sure he did, but he has stuffed his nose into his snuff-box."

"Don't you think, Jim, that you could give the lesson as well as master, if you had that book of his?"

"How slow master speaks." "Hold your tongue man; don't you see that he is thinking what he'll say next?"

"I do believe that master was a drinking last night, for he's half asleep while he's a talking." "How very polite! Why don't you return the nod of the gentleman?"

"Do you think he could do that sum without the key, which he always peeps into, when he is puzzled?"

"Don't you think that master would give a better lesson without that bit of paper, which he's always a looking at?"

"I wonder where he copied his notes from." "Do you see that there little book that is lying on his desk? well, he took them from that, for I saw him while we were saying our tables."

"I don't care about being late for school; — teacher is often late himself."

"What a raging passion master sometimes puts himself in; I wonder if he would like to be struck with a stick, as he sometimes strikes me."

"How awfully long teacher makes the prayers. Do you think that he could pray without the book?" "I don't understand the prayers; they seem to be written for men and women, and not for little boys like us."

"Teacher never called once upon me, for all the time I was ill."

"Do you know where teacher goes to of a night?

He goes to the cricketers' suppers; I saw him once myself coming out of the 'White Hart' late of a night."

Our moral duties may be classed under three heads, viz: (1) our duty to ourselves, — (2) our duty to our neighbour, — and (3) our duty to our God. To treat this subject adequately, or to give all the rules and maxims by which our moral faculties may be cultivated, in relation to these duties, would more properly belong to a treatise on ethics, rather than to a work on school education. There are, however, three cardinal school virtues, which demand the special attention of every schoolmaster: these cardinal school virtues are (1) Truthfulness ; (2) Honesty ; and (3) Humility.

ON THE CULTIVATION OF TRUTHFULNESS.

Truthfulness is said, by Professor Moseley, to be the great central pillar of the school-room. All cases of falsehood and deceit should be promptly denounced, and even the slightest evidence of prevarication, cunning, or hypocrisy, should be unmasked and exposed to reprobation. The concealment of truth is, in many cases, as great a crime as a direct falsehood. Boys too readily fall into a habit of adhering to the truth, as regards the letter, but violate it, as regards the spirit and intention. In such cases, the teacher should carefully explain to his pupils the true character of a lie; — that they tell a lie, whenever they say anything, or do anything, with the intention of deceiving others. Mr. A. entered his school one day, and found what appeared to him to be a piece of cotton rag pinned to the coat-tail of one of the boys, but which was, in reality, a piece of flannel. "Who pinned that bit of rag to this boy's coat-tail?" said he to his class; but no boy had moral courage enough to answer him. He looked round his class, and observed the evidences of guilt in the countenance of little Tommy Teaser, who was always the ringleader in all sorts of spiteful pranks. "Now, Tommy," said Mr. A., "tell me the truth; did you pin that cotton rag to this boy's coat-tail?"

"Please sir," answered Tommy, "I did not pin any cotton rag to his coat-tail." Mr. A. was not satisfied — he felt confident that the boy had told a falsehood; but being always very careful, in making any direct charge of falsehood without a full evidence of the fact, he patiently and cautiously made further inquiries. "Please sir," at length said a little boy, "it is a bit of flannel, not a bit of cotton rag." "Oh, that is it," said Mr. A., "and Tommy Teaser tried to deceive me by apparently adhering to the letter of the fact, while he lied in spirit and intention. Now, my boys, he has not only practised a piece of deception upon me, but he has also lied to himself by attempting to silence his own conscience. Do always remember, my children, that you tell a lie when you say or do anything with the intention to deceive others. I propose, as a punishment for this great crime, that Tommy Teaser shall not be allowed to enter the play-ground for the next two days. Do you not consider that this punishment is only fit and proper?" "Yes, sir," was the response of the class.

We should endeavour to keep, as far as possible, all temptations to lying and deceit out of a child's way. The fear of punishment, the love of gain, and the love of approbation, are the great causes of lying in the schoolroom. Whenever temptations to lying are unavoidably incurred, the teacher should be more than usually careful and watchful. When a boy, for example, is suspected of having committed a fault, it may not be wise to ask him the direct question, — "Did you do this?" for in such case a great majority of timid boys would most certainly tell a falsehood in order to shield themselves from punishment: lying is most frequently a cowardly act. Again, in the conducting of school examinations, great care and delicacy should be observed to PREVENT the boys from practising any deceit: here the love of approbation is the chief temptation to the practice of falsehood or deceit, as the case may be. The teacher should frequently illustrate the evil consequences of lying, by stories and anecdotes: the fable of the "Shepherd Boy and the Wolf" is an excellent example.

The teacher should in all things be an example to his pupils in honesty and truthfulness. He should especially guard against disingenuous concealment of his own ignorance, or that ridiculous pretension to universal knowledge which too often leads him to mystify what he cannot explain. The best apology for ignorance is the acknowledgment of it; and the highest practical lesson of truthfulness is the candid confession of error. Nothing can be more beautiful than that reciprocal confidence and trust which subsist between the honest teacher and his truth-loving pupils. But if one link in the chain of confidence be broken, the whole is destroyed. "When once a child detects you in equivocation," observes Miss Edgeworth, "you lose his confidence; his incredulity will then be as extravagant as his former belief was gratuitous. It is in vain to expect, by the most eloquent manifestoes, or by the most secret leagues offensive and defensive, to conceal your real views, sentiments, and actions from children. Their interest keeps their attention continually awake; not a word, not a look, in which they are concerned, escapes them; they see, hear, and combine with sagacious rapidity: if falsehood be in the wind, detection hunts her to discovery. Honesty is the best policy, must be the maxim in education, as well as in all the other affairs of life."

It is almost impossible to conquer the hateful habit of lying and prevarication, after they have been confirmed by long practice. So remarkable is the habit amongst a large body of the labouring population in this country, that they really feel a pleasure in deceiving people, and regard a well-told falsehood as the very highest evidence of superior intellect.

The following graphic description of the character of the Irish labourer, may be regarded as the type of cunning and deceit which exists amongst the uneducated classes of all countries: —

"All who are governed by any species of fear are disposed to equivocation. Amongst the lower class of Irish labourers and *under-tenants,* a class of people who are much oppressed, you can scarcely meet with any man who will give you a direct answer to the most indifferent question; their whole ingenuity, and they have a great deal of ingenuity, is upon the *qui vive* with you the instant you begin to speak: they either pretend not to hear, that they may gain time to think, whilst you repeat your question, or they reply to you with a fresh question to draw out your remote meaning; for they, judging by their own habits, always think you have a remote meaning, and they never can believe that your words have no intention to ensnare; simplicity puzzles them much more than wit. For instance, if you were to ask the most direct and harmless question, as, "Did it rain yesterday?" The first answer would probably be, "Is it yesterday you mean?" "Yes, yesterday!" "No, please your honour, I was not at the bog at all yesterday, — wasn't I after setting my potatoes?" "My good friend, I don't know what you mean about the bog; I only asked you whether it rained yesterday." "Please your honour, I couldn't get a car and horse any way, to draw home my little straw, or I'd have the house thatched long ago." "Cannot you give me a plain answer to this plain question — Did it rain yesterday?" "Oh sure, I wouldn't go tell your honour a lie about the matter. Sorrah much it rained yesterday after twelve o'clock, barring a few showers."

Oppression and terror necessarily produce meanness and deceit in all climates, and in all ages; and wherever fear is the governing motive in education, we must expect to find in children a propensity to dissimulation, if not confirmed habits of falsehood. Look at the true-born Briton under the government of a tyrannical pedagogue, and listen to the language of *inborn* truth; in the whining tone, in the pitiful evasions, in the stubborn falsehoods which you hear from the school-boy, can you discover any of that innate dignity of soul which is the boasted national characteristic? Look again; look at the same boy, in the company of those who inspire no terror; in the company of his school-fellows, of his friends, of his parents; would you know him to be the same being? His countenance is open, his attitude erect, his voice firm, his language free and fluent, his thoughts are upon his lips, he speaks truth without effort, without fear. Where individuals are oppressed, or where they believe that they are oppressed, they combine against their oppressors, and oppose cunning and falsehood to power and force; they think themselves released from the compact of truth with their masters, and bind themselves in a strict league with each other; thus schoolboys hold no faith with their schoolmasters, though they would think it shameful to be dishonourable amongst one another."

ON THE CULTIVATION OF HONESTY.

Picking and stealing is peculiarly the besetting sin of the children of the poor. When a boy has once acquired this odious habit, it is almost impossible to cure him of it. The slightest evidences of dishonesty should be promptly checked. The teacher should frequently show, by examples, how petty acts of pilfering lead to the gallows. He should promptly and carefully check all the incipient forms of dishonesty, such as the improper use of the property of others; the disposition to defraud others of their just claim; and so on. While the teacher should never allow his boys to think that he suspects them capable of dishonesty, at the same time he should not throw temptations unnecessarily in their way. The adage, "suspect a man, and you make him a rogue—trust him, and you make him honest," should be acted upon with caution. The temptations to dishonesty in the school-room chiefly originate in an undue love of property; in the love of luxuries; in the want of the necessaries of existence; and in malevolence of disposition. In trying to keep children honest, the teacher should look well to the motives which may be operating to lead them into the commission of crime, and they should be dealt with accordingly.

HUMILITY AND OBEDIENCE.

The virtues of humility and docility form the brightest and most lovely ornaments in the infant character.

They not only tend to promote the order and discipline of a school, but they, at the same time, induce that happy condition of mind which is most favourable for the acquisition of knowledge. On the contrary, superciliousness and conceit are not only the most prolific sources of disorder and disorganisation in a school; but they, at the same time, not unfrequently entail upon their possessors the irremediable doom of stationary ignorance. Conceit is the most enfeebling of all our passions, and little hope can be entertained of that boy's future career in life, who indulges himself with the fallacious idea that he has arrived at the *ne plus ultra* of knowledge.

I. *In order to foster a spirit of humility*, the teacher should show his pupils some of the mighty results which men of science have achieved; he should show what inscrutable mysteries there are still in nature, which have hitherto baffled the comprehension of the greatest intellects; he should show them that the greatest philosophers have always been the most remarkable for humility of character — Newton, for example, who compared himself to a little child picking up pebbles upon the sea-shore; he should tell them of the humility of Jesus, who left his seat on the throne of the universe to take upon himself our nature, and closed a life of sorrow by a death of agony, that he might restore a guilty world to the favour of its offended God.

II. *If the habit of obedience be properly cultivated, the child will promptly and cheerfully perform all the exercises and discharge all duties assigned to him by his teacher.* A due attention to home exercises, a punctual attendance at school, and a prompt attention to all the class arrangements, should be constantly and strictly enforced by the teacher. Children should never be allowed to follow their own whims in preference to the commands of their master, nor should they be permitted to depart from the general rules of the school under any specious pretence, without the direct sanction of their master. The spoilt child is always seeking to escape from control; and the teacher should be very careful how he allows himself to be swayed by the caprices of the little tyrant. The little world of the school-room may be regarded as a type of the great world, where there must be a supreme ruler, and a proper subordination of one authority to another, and where the duty of all is obedience to the claims of the ruler. Taking this aspect of the matter, a properly organised school, therefore, may tend to foster that spirit of obedience and contentment, which is so intimately connected with national peace, order, and prosperity. If children have not been vitiated by bad examples or by improper training, they will have an instinctive faith in the judgment and good intentions of their teacher; and, as a necessary consequence, they will eagerly receive his instructions, and implicitly obey his commands. But if the teacher once deceives them, by practising upon their credulity, or if he once treats them with harshness or injustice, then his power over them is lost for ever. Thus, the disobedience of children is often the result of the improper management of the teacher. No good teacher will require his pupils to perform any important duty without showing them the reasonableness of that duty; at the same time, it must be observed, that the highest evidence of docility of character is manifested where the pupils promptly and implicitly obey the commands of their master.

CLASSIFICATION OF SUBJECTS OF INSTRUCTION IN RELATION TO THE CULTIVATION OF THE INTELLECTUAL AND MORAL FACULTIES.

RELIGION constitutes the great fundamental basis upon which all the intellectual and moral faculties should be cultivated.

WRITING AND DRAWING cultivate the perceptive and imitative faculties; and if properly taught tend especially to cultivate the taste and foster a love of the beautiful.

MENTAL ARITHMETIC cultivates the memory and the powers of conception and reasoning. It also especially fosters the habit of promptitude, presence of mind, and mental activity.

ARITHMETIC cultivates the reasoning powers, and induces habits of exactness and order.

GRAMMAR cultivates the faculties of abstraction and reason.

GEOGRAPHY specially cultivates the memory and the conceptive faculties.

MATHEMATICS AND NATURAL PHILOSOPHY cultivate the reasoning powers chiefly in relation to the acquisition of necessary truths; they also cultivate habits of abstraction.

THE PHYSICAL SCIENCES exercise the observing and perceptive faculties, cultivate all the reasoning powers in the highest degree, and lead us to appreciate the force of moral evidence. If properly taught, they also foster the sentiment of devotion.

POETRY AND WORKS OF FICTION specially cultivate the imagination, the taste, and the moral feelings.

BIOGRAPHY, HISTORY, AND NARRATIVES specially awaken the faculty of attention, and cultivate the memory. They also exercise the moral affections, and lead to the formation of habits of reflection and self-inquiry.

MUSIC cultivates the taste, and refines and elevates the moral feelings.

INTELLECTUAL AND MORAL PHILOSOPHY cultivate all the higher faculties of our nature, and induce habits of abstraction and self-examination.

PART III.

ON THE COMPARATIVE ADVANTAGES OF DIFFERENT METHODS AND SYSTEMS OF INSTRUCTION.

THE systems of instruction, at present in use, are—the individual system; the collective system; the monitorial, or pupil-teacher system; and the system of home instruction.

These systems may be carried out on any of the plans or methods of giving instruction which we have described. The most important of these methods are as follows:—The synthetic and analytic methods, which may be either demonstrative or dogmatic; the interrogative, or catechetical method; the simultaneous method, which may be employed in the ordinary form of questioning, or in connection with the elliptical method; the lecturing method.

SYSTEMS OF INSTRUCTION.

I. THE INDIVIDUAL AND COLLECTIVE SYSTEMS.

The individual system may be used with advantage in small schools, especially if it be occasionally associated with collective teaching, and in constant co-operation with the system of home instruction. By the individual system of teaching, the master is more fully able to adapt his instruction to the peculiar capabilities of his pupils; at the same time, it is not so much calculated to engage their sympathies, or to arouse the principle of emulation, as collective teaching. Individual teaching may be conducted after any of the leading methods or forms of communicating knowledge,—that is to say, it may be either synthetic or analytic, demonstrative or dogmatic, lecturing or catechetical, &c. If the upper classes of a school are well supplied with good text-books, individual instruction becomes very effective, when it is associated with *self-instruction.* In this case, the master has merely to give an occasional glance at the work of each pupil, and to give him, time after time, such hints as may be required to stimulate him in proceeding with his work. Individual instruction, as it is practised in most of our Scottish schools, is merely supplemental to the system of home education. Here the parents are the real instructors, and the master merely directs, controls, or tests the progress of his pupils, who are to get up their lessons, tasks, &c., under the parental authority.

But, whatever may be the advantages of individual instruction, it is utterly impracticable, as a general system, in the common schools of this country. An easy process of arithmetic will show that a master of a school, containing one hundred and twenty children, could not give more than five minutes' individual attention to each boy in the course of a day! So that, after all, we have not to consider the abstract question,—whether the individual or the collective system is the best; but which of the two systems, under existing circumstances, is best calculated TO GIVE THE GREATEST AMOUNT OF INSTRUCTION TO THE GREATEST NUMBER IN A LIMITED TIME. A modern teacher shows his tact and skill by multiplying and subdividing his power, and by acting on numbers at once. The great point to be considered, in the management of a large school, is, not how you may rapidly advance a few scholars, but how you should classify, arrange, and instruct a large number of boys, differing in age, knowledge, and capacity, so as to give the greatest amount of instruction to them, as a whole. A master, who is skilful in the management of *numbers*, and who has practised the collective system, may teach a hundred boys at one time, on certain subjects, adapted for gallery lessons, as efficiently as he could teach one boy: and with a proper arrangement of classes, and a large black board, he could give more efficient instruction to a class of twenty or thirty boys, on almost any subject of education, than he could give in the same time to a single pupil. A good teacher always seeks to employ his energies to the greatest advantage: he rarely, if ever, wastes his strength upon one or two boys; what he does for the benefit of one boy, he does it in such a way as to conduce to the benefit of his whole class. While he teaches his own class, he, at the same time, directs the movements of half a dozen contiguous classes, placed under the management of his monitors or pupil-teachers. The motive power of the master is everywhere performing available work: amid the wear and tear of his various avocations, he economises the expenditure of his labour, by constantly keeping in view the principle of acting with the greatest efficiency on the greatest possible number. Like the machine, which drives a hundred spindles, weaves cloth, blows furnaces, &c., he never departs from the great end of his labour, or, for one moment, relaxes his directing and all-controlling power. But all this requires great skill, energy, decision, and conscientious perseverance. The modern schoolmaster holds no sinecure's place.

The collective system of teaching should never be employed in schools where the pupils are not properly classified. The pupils, to whom a collective lesson is given, should be nearly about the same stage of mental culture.

II. Home Education.

We have already shown, that the master of a family is God's vicegerent, in relation to the education of all the members of his household; and that every good teacher will act in co-operation with a proper system of home instruction. The school subjects most eligible for home study, are,—religious knowledge, writing, drawing, arithmetic, grammar, geography, and reading lessons. Those subjects are best adapted for home exercises which admit of being exactly defined, and of being readily tested: boys work the most industriously when they can see the results of their labour. Hence it is, that drawing and arithmetic are the best of all subjects for home study. Drawing cards should be given to the pupils to be copied at home; and exercises on arithmetic, grammar, geography, &c., should be given them out of text-books, which they should be allowed to take home with them.

The master should always have a certain time set apart for reviewing and correcting these home exercises: with a proper system of management, a few minutes every morning would suffice; and occasional hints should be, time after time, given to the parents, relative to their duties in carrying out the system of home instruction. Such a course would not be without its influence on the character of the parents themselves.

We suggest the following, as a routine of home lessons, for the upper classes in an elementary school: —

Monday Evening	.	Drawing and Practical Geometry.
Tuesday „	.	Definitions of Grammar, Grammatical Exercises, and Map-Drawing.
Wednesday „	.	Arithmetic, or Algebra, and Tables.
Thursday „	.	Texts of Scripture and Writing.
Friday „	.	Arithmetic, Drawing, and Reading Lessons.

III. The Pupil-teacher System.

We regard the pupil-teacher system as one of the greatest improvements which have taken place in modern education. No school, whatever may be its character, should be without pupil-teachers. The advantages of the system are two-fold:—(1) It constitutes the best nursery for schoolmasters. (2) It forms the great element of the order and organisation of a large school, and gives power and efficiency to the whole system of instruction.

The pupil-teacher should be adequately paid, and the master should always set apart a certain time for their special instruction, not only in the ordinary subjects of technical learning, but also on the subject of method, as applied to education. The master should register the progress which they make in the different subjects of instruction, and he should especially note down the manner in which they teach their classes, in order that he may be able to correct their faults, and to stimulate and improve their teaching powers. The master should always base his opinion of the teaching power of pupil-teachers upon the results of their teaching, and not upon any preconceived theory. The master should keep a register, for recording these results. This registration of the results of different methods of teaching will not only advance his own knowledge of method, but will also form the proper basis of his criticisms upon the lessons given by his pupil-teachers.

The pupil-teachers should prepare all their lessons, and the master should inspect their notes, before the lessons are given to the children.

IV. The Mixed System.

Our best schools are conducted on a mixed system of instruction, comprehending all the leading features of the particular systems just described. The peculiar combination of the systems must always be determined by the nature of the school, and the peculiar circumstances connected with it. In very large primary schools, where the pupils can never reach a high standard of technical attainment, the system of instruction must necessarily consist, almost exclusively, of a combination of the collective and pupil-teacher systems ; but in a small school, or where the school is provided with a good staff of pupil-teachers, or assistant masters, the individual and home systems of instruction should have a greater degree of prominence given to them. The individual and home systems should, if possible, be frequently employed in the instruction of the advanced classes.

METHODS OF INSTRUCTION.

1. Synthetic and Analytic Methods.

As a general rule, the synthetic method is best adapted for elementary instruction. In order to employ this method with efficiency, the teacher should first analyse the subject which he is about to teach, that is to say, he should separate it, or subdivide it into its elements or parts, and then he should put these elements or parts together, in such a manner as to conduct the minds of his pupils, step by step, to the general principles which he wishes to inculcate or establish. After the teacher has given a synthetic development of a subject, he may frequently show, with advantage, how the same subject may be treated analytically. Demonstrative geometry affords us some of the best illustrations of these two methods of teaching.

The analytic method of teaching is best used in connection with text-books and reading-books. After the pupils have read a certain portion of a book, the teacher may proceed to analyse the subject-matter, by the usual method of interrogation. At the same time, we cannot help observing, that a really good master will never allow himself to be fettered with text-books, however good they may be in themselves. A crutch is only useful to the lame and halting ; so, in like manner, a text-book is only useful to him who is too feeble to depend upon his own resources.

These methods may be frequently used, with advantage, in combination with each other. The most general rules of education have their exceptions, and, therefore, no teacher should blindly adhere to any general rule.

EXAMPLES OF THE SYNTHETIC AND ANALYTIC METHODS OF TEACHING.

Let us suppose, for example, that the teacher wishes to explain to his pupils the law of descending bodies; then he would proceed in the following manner: —(1) By the synthetic method. If a stone be let fall from the top of a high tower, you will find that it will move more and more rapidly as it falls. During the first second of its descent, it will fall through the space of sixteen feet. At the end of the second second of its descent, it will have fallen through four times sixteen feet; here the time is two seconds, and the number of feet is found by squaring the 2, and multiplying by 16; that is, the space, in feet, is equal to $2^2 \times 16$. At the end of the third second of its descent, it will have fallen through nine times sixteen feet; here the time is three seconds, and the number of feet is found by squaring the 3 and multiplying by 16, that is, the space in feet is equal to $3^2 \times 16$. And so on to any number of seconds. You see, then, that the number of feet passed over by a falling body in any given number of seconds, is found by squaring the number of seconds and multiplying that result by 16; thus, the number of feet passed over by a falling body in three seconds is equal to nine times sixteen feet, or one hundred and forty-four feet. (2) By the analytic method. The space passed over by a falling body increases with the square of the time; that is to say, the space in feet is equal to the square of the number of seconds of the body's fall, multiplied by 16. Thus, in two seconds, the number of feet through which the body will fall is equal to 2 squared multiplied by 16, or 64 feet; and so on to any other number of seconds.

Generally speaking, the analytic form is more concise than the synthetic.

II. Interrogative or Catechetical Method.

The interrogative or catechetical method of teaching may be used for two distinct purposes:—(1) For the purpose of examination, or for simply testing the progress of the pupils. (2) For the purpose of conveying instruction: when interrogation is employed in this form, we have called it the method of suggestive interrogation. This method may be used either for individual teaching or for collective teaching: the observations which we have to give on this method are especially applied to the latter.

The rules to be observed in using the method of interrogation in these two forms, are, in some respects, very different. But the following rules are common to both forms:—

PRINCIPLES AND RULES COMMON TO THE TWO FORMS OF INTERROGATION.

1. The answers may be simultaneous or individual, according to circumstances; but the teacher should always tell his pupils, when he requires them to answer simultaneously, or when individually. When individual answers are required, all the pupils, who are prepared to answer the question, should hold up their hands; and then the master should name the boy whom he wishes to give the answer; if the boy's answer be incorrect, then the master must call upon another boy; and so on.

2. The language used by the teacher should be as simple and concise as possible. Every question, put by the teacher, should admit of a definite answer. The questions should be adapted to the capabilities of the pupils, both as to the matter and language. If a question is not at once understood by the pupils, then the master must change the form of language, or he must subdivide the question, until he is understood. Long answers should never be expected from young children; on the other hand, the more advanced boys should be accustomed to express their ideas in good language. The teacher should not be satisfied with indefinite or incomplete answers.

3. Never put questions which simply require a *Yes*, or *No*, for the answer.

4. The questions should be given in such an order, as to form a systematic and progressive development of the subject. Rambling questions should never be put, until the whole subject has been gone over.

5. Random answering should always be checked; at the same time, a due amount of quickness in answering should be cultivated.

6. Children should be accustomed to answer questions in their own language.

7. The subject-matter of a question should be sometimes varied in form, so as to require a different form of language in the answer. As the same facts may be viewed in different aspects and relations, the teacher should vary

the form of his questions so as to embrace these different aspects or relations; and he should always put those questions first, which take in the most striking or important of these facts or relations.

8. The pupils should be sometimes called upon to question each other.

9. The teacher should express his approbation when a good answer has been given to a question of more than ordinary difficulty.

10. The eye of the teacher should be constantly upon all the pupils in his class, and whenever he detects the slightest symptoms of inattention on the part of any of them, he should at once put a question to the individual, on the matter that had just been explained.

11. Questions should be put at the three following stages of instruction:—(1) *at the commencement of the lesson*, in order to determine the knowledge of the class on the subject upon which the lesson is to be given, to excite the curiosity of the pupils, and to enable the teacher to adapt his instruction to their knowledge and capabilities; (2) *during the lesson*, in order to secure the attention of the pupils, and to make them more thoroughly acquainted with the subject of the lesson; (3) *after the lesson*, in order to give a general view of the whole subject, and to make the pupils fully master of it.

Special Rules for Examination Questions.

1. The questions should be restricted to the subject of examination. The questions should form a strict analysis of the subject-matter.

2. The question should not contain any hint or clue to the answer.

3. Simultaneous answers should never be taken as decided tests of progress.

4. Not the slightest assistance should be given to the pupil in framing his answer.

5. In order to give the pupils a requisite amount of confidence, the questions should be short and easy at first, and then, as the examination advances, they should be

gradually increased in difficulty. Herein lies the secret tact of a first-rate examiner.

SPECIAL PRINCIPLES AND RULES RELATIVE TO SUGGESTIVE INTERROGATION.

1. The questions and observations of the master, and the answers given by the pupils, should together form a sort of conversational lecture. In order to sustain the continuity of the lecture, the gradations or steps should be easy and natural. The teacher should endeavour to make the pupils take an equal share of the lecture. Every question, taken in connection with the explanatory remarks which may accompany it, should lead to, or suggest, the answer. The teacher should tell his pupils so much of a thing, and leave them to find out the remainder. The question and its answer should be logically connected with each other: (1) the question may contain the premises, — the answer, the conclusion; (2) the question may contain the facts, — the answer, the generalisation or deduction; (3) the question may contain the ideas,— the answer, those ideas differently arranged or expressed in another form of language.

2. The teacher should frequently preface his questions with an exposition of facts and principles ; but the questions themselves should always be so framed as to reproduce the facts and principles in the pupil's own language.

3. The method of suggestive interrogation being essentially synthetic, the system of questions should proceed according to a systematic and progressive order of development ; that is to say, facts should precede general principles — expositions should go before abstract rules — the concrete should lead to the knowledge of the abstract — the simple to the complex — the familiar to the unknown,— and so on.

4. The teacher should never pass over a question until it has been fully answered. If one boy does not answer it, then it should be put to another boy — and so on ; and if the pupils fail in giving a satisfactory answer, then the

teacher should go over all the previous steps again, adding some fresh explanations, so as to lead them to the proper answer. The teacher should never directly tell them the answer; he should rather show them how to find it out. If the answer given by the pupils is incomplete or in any way defective, and yet as good as the teacher might reasonably expect from them, then he should supply them with the complete answer, taking care not to alter the language of the pupils, excepting where it is absolutely necessary.

5. The questions requiring simultaneous answers should be few and exceedingly simple.

6. The teacher should put the most difficult questions to the more advanced boys in the class; and thus make them become the instructors of those who have made less progress.

EXAMPLES OF GOOD AND BAD EXAMINATION QUESTIONS.

Suppose the pupils of the class to have read the last seven verses of the twenty-sixth chapter of St. Matthew's Gospel, and that the master proceeds to give the following examination questions:—

Questions.

1. Where was Peter when the first damsel spoke to him?
2. What did she say to him?
3. What was his answer to her?
4. Did he deny Jesus before all the people?
5. Where was Peter when the second damsel spoke to him?
6. Did he deny Jesus again?
7. How did he deny Jesus the second time?
8. Who next charged Peter?
9. What reason did they give him for believing that he was one of the followers of Christ?
10. How did Peter answer them?
11. What took place immediately after Peter had denied his Lord for the third time?
12. Of what did the crowing of the cock remind Peter?

13. Why did Peter deny our Lord?

14. What sin did Peter commit, and what aggravated this sin?

15. What did Peter do when he remembered the words of Jesus?

16. What caused him to weep bitterly?

17. Good people are very sorrowful when they find that they have been led into sin. What made Peter so sorrowful?

Remarks on the Questions.

Nos. 4. and 6. are bad questions, for they simply require *yes* or *no* for the answer. No. 10. is not a good question, for it is not exact enough, and the proper answer to it is too long. Nos. 13. and 16. would require some explanations to be given by the teacher. No. 16. should be given in two distinct questions. No. 17. is rather too suggestive for an examination question.

No. 4. should be put in the following form:—Before whom did Peter this time deny Jesus? And No. 6. would be better put as follows:—What did Peter say to the maid? No. 13. might be preceded by a question something like the following:—What would they have done to Peter if they had known that he was a follower of Jesus? And No. 16. might be preceded by the question,—What reminded Peter of the falsehood he had told? How should people feel when they find that they have committed a great sin? or, What do people do when they feel very sorrowful? What made Peter so very sorrowful?

Questions on any given portion of the Scriptures may be put in a great variety of forms, more or less eligible: thus the text upon which Question 15. is given, may be broken into the following forms of questions:—When did Peter go out? What did he do after he went out? What were the words of Jesus which Peter remembered? How many times did Peter deny his Lord before the cock crew? And so on.

EXAMPLES OF SUGGESTIVE INTERROGATIONS.

No. 1. — *On Peter's Denial of our Lord.*

Supposing the same portion of Scripture to have been read, then the following suggestive questions may be given:—

1. While Peter sat without in the palace of the high priest, a damsel came unto him. (1) Who came unto Peter? (2) Where was Peter when the damsel came to him? And so on.

2. This damsel had no good intentions towards Peter. She wanted him to be condemned and put to death with Jesus. What did she say to Peter?

3. Peter had not the boldness to tell the truth. He was afraid to die for his Lord. What answer did he give to the damsel?

4. Wishing, perhaps, to escape further notice, he went out into the porch, but here he met with another tormentor, for another maid saw him, and said to the people that thronged the porch of the temple, this *fellow* was also with Jesus of Nazareth. (1) To whom did she say this? (2) Where was Peter when this second charge was made? (3) What low name did she call Peter?

5. Peter got more alarmed. He lost all command of himself, and added sin unto sin,—he not only again denied his Lord, but denied him with an *oath*, and spoke *slightingly* of him. (1) In what manner did Peter this time deny Jesus? (2) What words did he use in referring to Jesus? (3) What sin did Peter here commit, besides falsehood?

And so on throughout the remaining verses.

No. 2.—*On the Diurnal Motion of the Earth.*

Suppose the pupils to have read some simple book on this subject (see Tate's Astronomy, page 13.); then the teacher might question them in the following manner:—

Teacher. If I hold an orange before a candle at night (this should actually be done), how much of the surface of the orange will be enlightened?

Teacher. How much of the surface will be in the shade?

Teacher. Now, if I turn the orange round, the parts in the shade will be brought within the light. After I have turned the orange completely round, how much of its surface will have been brought within the light of the candle?

T. How much of the earth's surface does the sun enlighten at one time?

T. By what means is every part of the earth's surface brought within the light and heat of the sun?

P. The earth is made to turn round upon its axis, in the course of every day.

T. (Turning a globe round.) Now where is the axis in this revolving globe? Is there a real axis, or only an imaginary one?

P. The axis is only imaginary, and it is the line about which the globe appears to turn.

T. What have you now to say respecting the axis of the earth?

P. That it is the line about which the earth appears to turn.

T. What are the poles upon the earth?

P. The two points where this imaginary axis meets the earth's surface.

T. On what point is my finger now placed?

P. On the North Pole.

T. (Tracing the equator with his pointer.) What is this line called, and how is it placed with respect to the poles?

P. It is called the equator, and lies at the same distance from either of the poles.

T. How does the equator divide the globe?

P. Into two equal parts. One is called the northern hemisphere, and the other the southern hemisphere.

T. Upon what hemisphere is my hand now placed?

P. The northern hemisphere.

T. Is there any other way in which the changes of day and night might be produced?

P. Yes; the sun might turn round the earth in the course of a day.

T. If a poor woman wanted to roast a joint of mutton before the fire, what would she do in order to have every part equally roasted ?

P. She would tie a piece of string to the mutton, and make it spin round before the fire.

T. Is there any other way in which this might be done ? Now think.

P. The fire might be made to turn round the meat.

T. But which of these methods is the better ?

P. The first method, certainly; because it must be far less trouble to make the meat turn round before the fire, than to make a machine for turning the fire round the meat.

T. What should you say if a man proposed to do this ?

P. That, although he might show some ingenuity, yet he would be a very foolish person.

T. Now it is equally ridiculous to suppose that the sun turns round the earth. It is too monstrous for us to conceive it possible, that Almighty God, who is the fountain of all wisdom and goodness, could effect any of His purposes by the agency of means, which it would appear unsuitable, even on the part of His creatures, to employ.

III. The Simultaneous Method.

In this method, all the pupils in the class are allowed to speak at once. Here, in order to secure a uniformity in the responses, the questions put to the class should be very short and simple. One great object to be served by this form of teaching, is to give vitality and a tone of sympathy to the class. It also economises the time of the master, by enabling him to direct his energies to large numbers at once. Its great defect is, that it creates noise and confusion in the school, and thereby interferes with the instruction that may be going on in the other classes. It is best practised, as a means of instruction, in connection with the elliptical method of teaching, and when *gallery lessons* are given to four or more classes combined.

The teacher must guard against the following evils connected with the practice of this method:—

1. Some eager vain boys will answer before the others.

2. Some boys will defer their answer, until they catch the answer of the leading boys in the class.

3. Some boys will remain silent.

4. There will sometimes be a confusion in the answers, especially when the answers are too long.

By a little tact on the part of the teacher, all these evils may be guarded against.

This method may be advantageously used in the examination of large classes, when it is requisite that the examiner should economise his time. We shall afterwards have occasion to notice this form of its application.

The plan of answering questions simultaneously is also an excellent way of fixing simple and important facts in the memory. The name of a great man, for example, is recited aloud by all the boys in the class — they then spell the name aloud — and lastly the master writes it upon the black board. Thus, all their senses are brought to bear on the thing to be remembered, — how can they ever forget it?

There are few subjects which may not be taught, with tolerable efficiency, in the largest schools, by a well organised method of simultaneous answering.

The best course for a teacher to follow, is to vary his methods of instruction. After teaching for a sufficient length of time by the method of suggestive interrogation, he should indulge his pupils with a few simultaneous answers; and then he may close his lesson with catechising two or three boys singly, before the whole class, so that all the boys, if they are disposed to listen, may derive some benefit from the individual instruction.

EXAMPLE OF SIMULTANEOUS TEACHING AFTER THE CATECHETICAL METHOD.

Subject of the lesson — Peter's denial of our Lord. Matthew, chap. xxvi. ver. 69.

Teacher. Who came to Peter as he sat without in the palace? *Pupils.* A damsel. *T.* With whom did she say Peter was? *P.* With Jesus. *T.* Jesus is said to be of a certain place—what place did the damsel name? *P.* Galilee. *T.* Where is Galilee? *P.* In Palestine. *T.* Point your fingers to it on the map. And so on.

THE ELLIPTICAL FORM OF TEACHING.

The advantages of the elliptical form of teaching are as follow:—

1. The ellipsis does not break upon the continuity of the lesson or narrative.
2. It is generally more concise than the usual forms of question and answer.
3. It gives a variety of form to the lesson, and to a certain extent relieves that censorious-like character of catechetical lessons.
4. It engages the sympathies of the children, and more completely gives to the lesson the character of a common lecture, in which the pupils take a part.

The following principles and rules should be observed in practising this method of instruction:—

1. The word or words to be supplied, by the pupils, should be short and easy. At the same time, the word, to be supplied, should awaken some intelligence on the part of the pupils.
2. Ellipses should be associated with direct questions.
3. The word or words to be supplied should not be doubtful or ambiguous. Take the following examples:—

(1). In comparing 6 and 9, some teachers would say, "9 is greater than — ." Here the word to be supplied might be any number less than *nine;* and besides, the boys would most likely say *six,* without ever thinking about the matter. In this case, it would be better to ask the question, "Whether is 6 or 9 the greater?"

4. The ellipses should be single words or simple phrases.

5. Arithmetic, and other subjects of this kind, should be rarely taught by the elliptical method.

6. As a general rule, an ellipsis should be equivalent to a good question. (See the rules given in relation to the suggestive method of interrogation.) Take the following examples:—

[The words intended to be supplied by the pupils, are printed in Italics.]

(1) "The colour of common ink is *black*." Here this is equivalent to the question—"What is the colour of common ink?"

(2) "Ink is *black*." Here the word to be supplied by the pupils is doubtful, for it might be *red*, or *liquid*, or any other property of the ink.

(3) "When the flame of a candle is applied to hydrogen gas, it will *burn*." Here this is equivalent to the question — "What will take place when the flame of a candle is applied to hydrogen gas?" "It will burn." Now, in the place of *burn*, some boys might say, *ignite;* but this variation in the form of the response would be rather an advantage than otherwise, provided the teacher embraces the opportunity of explaining to his pupils how different words may be properly employed to express the same idea or thing.

EXAMPLES OF THE ELLIPTICAL METHOD OF TEACHING.

Subject of the lesson. Peter's denial of our Lord. Matthew, chap. xxvi. verse 69. "Now, Peter sat without in the *palace:* and a damsel came unto *him*, saying, Thou also wast with *Jesus* of Galilee. But Peter, being afraid to tell the truth, *denied* before them *all*, saying, I know not what thou *sayest*. And when he was gone *out* into the *porch*, another *maid* saw him, and said unto the people collected in the porch, This *fellow* was also with *Jesus* of Nazareth. And Peter, still more afraid, again *denied* with an *oath,* I do not know the *man,* that is, he wickedly pretended not to know *Jesus.*" And so on.

IV. THE CONSTRUCTIVE METHOD.

This is perhaps the best form of the synthetic method of teaching: its fundamental idea is that of progressive development; it, in fact, embodies the essential features of all our most approved modes of primary instruction. The first elements of Arithmetic, Algebra, Geometry, Mechanism, Geography, and Grammar may be efficiently taught by this method.

V. ILLUSTRATIVE METHOD.

By this method, we convey instruction to the minds of children by means of pictorial representations, diagrams, models, and experimental illustrations, addressed to the senses, or by pictures addressed to the imagination.

Pictures may be either descriptive or historical, that is, they may depict objects, animals, persons, &c., or they may represent scenes and events. A child reads a picture as we do a book. Good pictures of animals not only give the shape, colour, and relative size of the animals, but they also represent the peculiar habits of the animals. A good picture of a tiger, for example, shows a child, at a glance, what are its structure and habits, — how it lives, on what it lives, and in what region of the earth it lives. The child reads the history of great events in a good picture,—the grand features of the events, the scenes amid which they transpired, the characters of the different actors, and so on, all readily fix themselves in the child's mind. Picture lessons constitute one of our most important means of primary education. On the subject of pictures, as addressed to the imagination, see pages 147 and 195.

In teaching (such subjects as geography and mechanism), models, and other material aids of instruction, are most invaluable.

Experimental illustrations give the matter-of-fact form of abstract laws and principles.

VI. The Lecturing Method.

Strictly speaking, a continuous style of lecturing is not teaching. But when lecturing is accompanied with or followed by a close course of questioning, it becomes an efficient form of instruction, as applied to adults or to an educated class of boys. Simple conversational lectures on the science of common and useful things, illustrated by easy and familiar experiments, have contributed very much to raise the standard of intelligence in our elementary schools. The experimental apparatus employed in these lectures should be of the most simple kind, and, for the most part, constructed out of the common articles of household use. Expensive instruments should never be placed in the hands of ordinary teachers, for the skill requisite for using an instrument is, generally speaking, in proportion to the delicacy of its construction. It is not desirable, nor would it be expedient, if even it were desirable, that teachers should become finished manipulators: the great facts and laws of physical science may always be demonstrated to children by the aid of apparatus which is within the reach of almost every respectable householder.

VII. Mixed Method.

In order to sustain the interest of children, the teacher should vary his methods of instruction. The very best methods, when uniformly followed for any length of time, become dull and monotonous, and, as a necessary consequence, the pupils cease to feel any interest in the lesson. Variety in method, as well as variety in the subject-matter, should form an essential feature in all school instruction. When the pupils get tired with questions, the master must try ellipses; and when they get tired with ellipses, he must have recourse to pictorial representations, or experimental illustrations, accompanied with a sort of *tête-à-tête* lecture: after having changed the methods, in this manner, he may return to his first method, for it will then have regained its original freshness. The intelligent teacher should modify, arrange, and combine his methods so as to form a harmonious whole suited to the peculiar circumstances of his school.

On this subject, the author of "The Educator's Instruments" observes:—"The evidencing of truth to children lays a heavy and continuous tax upon the teacher's inventive faculties; for the same lesson, involving precisely similar principles, however oft repeated, needs the dress of new language, must come with new illustration evoked by the various indications of the taught; and as nothing so tends to clarify and intensify one's views as looking at them through varied and harmonising media, so nothing will lead to such just and clear apprehension as placing the same truth repeatedly before the young, in language and with illustration as if spontaneously called forth at the moment."

VIII. On the Reproduction of Lessons in Writing.

The advanced boys in a school should be frequently required to reproduce the lessons given to them by the master. This plan gives efficiency to all the methods of instruction ordinarily used in our schools; it forms an almost necessary adjunct to the method of lecturing. We have already fully explained the advantages to be derived from this exercise (see page 119.); it is, therefore, only necessary in this place that we should make a few remarks respecting the duties of the master, in relation to these written exercises, and point out certain artifices whereby the amount of his labour may be lessened, without materially infringing upon the efficiency of the plan.

After the time allotted to the reproduction of the lesson has expired, the master should first ascertain the number of boys that have completed the exercise. He should then call upon about half a dozen of these boys taken at random, to give their exercises. He then assumes that these exercises may be taken as average specimens of the work of the class, and that the errors found in them will give him a tolerably good idea of the errors contained in all the others. He rapidly corrects the errors, and notes down the imperfections in these specimens. He then writes the corrected passage on the black board, and explains to the whole class the nature of the errors and blunders which have been committed.

We shall now consider, more fully, some of those artifices, which tend to economise the time and labour of the master.

IX. On certain Plans or Artifices for Economising the Time of the Master in the Examination of Classes, or, it may be, in extending and thoroughly grounding the Knowledge which the Pupils may have acquired.

These plans or artifices should, of course, be altered or modified to suit the peculiar tastes and capabilities of the master. The following examples are given, as illustrations of the main features, which ought to characterise all such plans or artifices; these main features are:—

(1) The master should act upon the *whole* of the pupils of his class, at once, rather than on *individuals.*

(2) He should get all his pupils to act perfectly in concert, or exactly together.

1. *An Examination Lesson on Spelling.*

After requesting, in a cheerful tone of voice, all the boys in the class to prepare their slates and pencils for writing down the words which he is about to give them, he recites the words slowly and distinctly. As he dictates, word after word, the pupils write them on their slates, in the same order. When the words have been all written, he calls upon the whole class to spell the words simultaneously, exactly as they are written on their slates, leaving a moment's pause between every two consecutive words, to allow those, who are wrong, an opportunity of placing a mark at each mis-spelt word. The teacher then requests the boys to count the number of their errors, and to report the same to him. He next gives a rapid glance at the slates, to see that all is right, looking with more care at the slates of those boys in whose honesty he has not the fullest trust. The master will now be able to register the average attainments of the class. But, if instruction be specially his object, he will write upon the black board all those words which have been mis-spelt, giving, at the same time, such remarks as he may deem necessary, relative to the rules of spelling, or the quality of the writing.

2. *An Examination Lesson on Arithmetic.*

The teacher or examiner recites, in a distinct tone of voice, the arithmetical problem which he requires the class to solve. After a sufficient time has been allowed them for working out the question, he calls upon those boys, who have finished it, to hold up their hands, or, it may be, to stand. He then says — "Let all those boys hold up their hands, who have got the following answer;" he then reads out the answer, and at once sees the number of boys who have done the question correctly. He then desires the boys, who have not worked the question correctly, to mark the erroneous figures in their answers. A rapid glance at a few slates will generally be sufficient to act as a check upon any unfair dealing on the part of the boys. In some cases, it may be advisable to inspect the slates of those boys who had not finished the question. But the teacher should be careful how he gives any countenance to idleness, or how he wastes his energies on individuals. If instruction be a special object, the problem should be done upon the black board, accompanied with an exposition of principles, &c. The teacher should frequently call upon the more advanced boys to give this exposition.

Respective Advantages of the three great Methods of Examination.

There are three great methods of examination, viz.:

the simultaneous, the individual, and the method of written answers.

1. *The simultaneous method of examination* awakens a general interest, and takes up little time; but we cannot *easily* arrive at a correct estimate of the attainments of the class, by the exclusive use of this method.

2. *The individual method of examination* is more rigid and more to be relied on, than the simultaneous method; but it takes up more time, and leaves the great body of the class comparatively unemployed, while each individual is being examined.

3. *The method of written answers* is the most exact and searching of all the methods, while, at the same time, it keeps all the pupils engaged; but it is long and tedious, as regards both the writing of the papers, and the inspection of them.

A judicious examiner will not fail to avail himself of all the advantages arising out of the use of the three methods.

X. On the Preparation of Lessons.

No teacher should give a lesson until he has made himself thoroughly master of the subject. He should also fix in his own mind how he should treat it, both as to arrangement and method. He should, generally, draw out a sketch of the lesson in the form of notes, but he should never refer to these notes while he is giving the lesson; he ought rather to have these notes fixed in his mind before he begins the lesson. His notes should be concise and methodical; they should form leading points in the lesson, with which he should associate the leading train of ideas which are to constitute the real knowledge to be given to the pupils. He should not confine himself to any set form of language; and his questions, as a general rule, should be framed at the time of asking them. No teacher should become a slave to books or notes, while he is giving a lesson; books and notes should be the passive tools of the master — not he the subservient slave of them.

The master should carefully revise the notes of his pupil teachers; and he should never allow the pupil teachers to give a lesson without they are fully prepared to give it with efficiency. He should always place before them a high standard of teaching power. Every pupil teacher should be provided with a book for entering down his notes of lessons.

The form of the notes of lessons must necessarily vary with the nature of the subject, and the age of the boys to whom the lesson is to be given. But there are, no doubt, certain general principles of arrangement which are common to all subjects. The following are the notes of a lesson on ink, supposed to be given to the upper class:—

Notes of a Lesson.

Subject—Common Ink.

Properties.—Liquid, black, and slightly adhesive.

Use.—Used for writing on white paper. The use depends upon the properties—why liquid—why black—why slightly adhesive. What do we write upon the black board with?—why we cannot write upon white paper with white chalk, &c.

How made.—Experiment. To a solution of sulphate of iron (green copperas) add a solution of nut galls—a black precipitate is formed. The addition of some gum helps to keep this black substance from falling to the bottom, and also to make the ink adhere to the paper.

How to take ink stains out.—Experiment. To the black liquid formed in the last experiment, add a few drops of oxalic acid. The colour is at once destroyed.

Words to be explained, and their meanings illustrated.—Adhesive,—mention some things that are adhesive. Sulphate of iron,—what it is like—what it is composed of—where it is found—and what it is used for. Nut galls,—what are their properties—where they are got. Precipitate,—its meaning. Oxalic acid,—what it is, &c.—found in plants, &c.

When a teacher is about to give a lesson on any proposed subject, his first inquiry should be, "Am I sufficiently acquainted with the subject?"—his next inquiry should be, "How should I treat the subject?" If he is not sufficiently acquainted with the subject, he should at once study it, and seek information upon it. If he does not know how to treat the subject, he should at once seek information from those who are properly qualified to give it.

When the subject of the lesson requires experiments or practical illustrations, he should not spare a little trouble or expense, to render himself fully qualified for the performance of his work. Experimental illustrations should be repeated, again and again, until he finds that he can perform them with perfect certainty and success.

XI. On the Periodical Examination of Classes and the Registration of Progress.

The whole school should be examined at stated intervals, with the view of registering the progress of the pupils, and also for the purpose of remodelling the classes. These intervals will of course vary according to the circumstances and peculiar relations of the school, but the interval should, in no case, exceed a quarter of a year. Whatever may be the period fixed for these general examinations, it should be strictly adhered to, and the examinations and registrations should be thoroughly carried out. When any boy is found qualified to enter a higher class, or, on the other hand, when any boy has not kept pace with the progress of his class, no feelings of delicacy should prevent the master from making the necessary transfer. We shall afterwards have occasion to treat of the different forms of school registers.

XII. On the Qualifications of the Schoolmaster in relation to his Professional Duties.

The qualifications of the schoolmaster may be viewed in the three following aspects:—With respect to his attainments; to his capabilities; and to his character.

The Teacher's Attainments, considered in relation to his Office.

The following attainments may be considered essential to his success, as a teacher, whatever may be the nature or peculiar character of his school.

1. He should be thoroughly acquainted with the following subjects: — The leading doctrines and narratives of Scripture; mental and common arithmetic; reading, writing, and spelling; English history; and the principles of teaching.

2. He should have a fair knowledge of the following subjects: — Drawing, mensuration, and practical geometry; geography and astronomy; elementary grammar, composition, and general history; elementary algebra, to the end of quadratic equations, together with a little demonstrative geometry; industrial mechanics, and some simple course of experimental philosophy.

It is highly desirable that his mind should be well stored with general knowledge, that he should have a ready command of language, and that he should be able to express his ideas, with fluency, clearness, and precision, upon any subject within the range of his knowledge. Profound attainments, in any technical subject of knowledge are scarcely of any value to him, as an elementary teacher. His knowledge should be varied, rather than profound. An acquaintance with Latin or Greek, or the higher branches of mathematics and natural philosophy, would rather interfere with his usefulness, as an elementary teacher. At the same time, it is necessary to bear in mind that a schoolmaster should know a good deal more than he has to teach. Whatever he has to teach, he should know thoroughly, at least as far as he may have to teach it. Thus, to teach little boys drawing, it is not necessary that he should become an artist; to teach English, that he should know French; to teach simple equations, that he should know surds; or to teach some of the most important principles of geometry, that he should know the fifth book of Euclid.

All that technical knowledge which leads the mind of the teacher away from the subjects of elementary education, tends most undoubtedly to compromise his usefulness, as an elementary teacher. It is true, people talk much about the discipline which such subjects give to his mind, as if the knowledge, which is essential to his duties, as a teacher, did not sufficiently exercise, discipline, and task his intellectual energies. Would it not be better to raise our standard of his knowledge in physical science, and in the principles and art of education, than to exact from him such an amount of knowledge in those technical subjects of learning, which have no direct bearing upon the duties of his profession? But we suppose that inspectors of schools, and masters of training institutions, will always regard their own course of collegiate education as the proper type of the system which should be pursued in the training of schoolmasters.*

THE TEACHER'S CAPABILITIES AND CHARACTER CONSIDERED IN RELATION TO HIS OFFICE.

A teacher should be a pious, conscientious man; his talents should be, at least, respectable; and he should have a decided predilection and aptitude for teaching. It is only requisite that we should make some observations relative to the qualification which we have called aptitude for teaching.

Aptitude for Teaching.

The most essential of all qualifications for teaching is that peculiar faculty which we call, for the want of a better name, aptitude for teaching. Aptitude for teaching! what is it? There is no mistaking it, when we see it. Everybody recognises it, when it is presented to his notice. Is it a quality of the head or the heart, or does it belong to both? Is it a natural or an acquired gift? Is it an instinct, or a habit acquired by efforts, repeated from the earliest dawn of reason? Does it grow spontaneously by imperceptible gradations of development, or is it a faculty dependent upon the growth of certain intellectual and moral powers?

We witness certain teaching effects, and too readily rest satisfied with attributing them to what we call aptitude for teaching, as if it were some original and mysterious faculty, without at all seeking to discover the chain of circumstances, and the qualities of mind and character, which have contributed to form this aptitude. But we cannot allow the subject to remain in this unphilosophical condition of mysticism. The aptitude for teaching must undoubtedly be a qualification resulting from the development of certain intellectual and moral faculties of our nature. Let us endeavour to analyse this remarkable qualification, that is to say, let us endeavour to discover those qualities, intellectual and moral, with which it is invariably associated, or, rather, with which it is connected by the constant relation of cause and effect.

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* Her Majesty's Inspectors *now* give examination papers on method in connection with all the leading subjects of primary education.

It will be instructive, not only to ascertain what such a man MUST be, but also what he MAY not be.

1. *What a man, having an aptitude for teaching* MAY *not be.* (1.) He may not be a man of great technical attainments. (2.) He may not be a man of comprehensive mind, or possessing great reasoning powers. (3.) He may not be a man of robust frame.

2. *What a man having a great aptitude for teaching* MUST *be.* (1.) He must have a love for children, and a knowledge of their tastes, habits, and capabilities. (2.) He must be a man of a kind and benevolent disposition. (3.) He must love knowledge, and feel a pleasure in communicating it. (4.) He must be a man of fervid imagination, and of great enthusiasm, decision, and force of character. (5.) He must be a man of respectable general attainments. (6.) He must have considerable fluency of speech, and powers of illustration and exposition. (7.) He must have faith in the efficacy of instruction, as a means of ameliorating the condition of society. (8.) He must be a man of quick and observing habits, and must be in the constant habit of reflecting and reasoning upon the various methods by which knowledge may be communicated to children.

Now as all those qualities, essential to great aptitude for teaching, admit of cultivation, it necessarily follows that the aptitude for teaching also admits of cultivation in the same degree. This aptitude for teaching, therefore, is no more instinctive or innate than any of the intellectual or moral faculties of our nature can be said to be.

XIII. ON SCHOOL REGISTERS FOR RECORDING THE RESULTS OF DIFFERENT SYSTEMS OR METHODS OF INSTRUCTION, AND ALSO FOR TESTING THE CAPABILITIES OF TEACHERS IN RELATION TO THESE METHODS.

These registers should be regularly and faithfully filled up by the head schoolmaster, who is supposed to be acquainted with all the circumstances and facts necessary for doing so, and who is supposed to test the results of the various lessons, given by the pupil teacher or by the assistant teacher, as the case may be. The teacher, who gives the lesson, is supposed to adhere strictly to some definite method or combination of methods throughout the lesson, whether it be given according to the interrogative method, or any other particular method, or according to a combination of two or more methods.

No doubt all intelligent teachers have, more or less, formed certain general views, based on their experience, respecting the relative merits of different methods of education. But these views are too frequently based upon a few incidental facts, and are very rarely the result of a cautious, candid, and systematic induction of facts which have been carefully observed and faithfully recorded, and which are so comprehensive and determinate, as to embrace all the circumstances which may in any way affect the question.

The relative merit of any two methods will, in general, be tested by the progress of the same class of pupils, when taught by the different methods, under the same circumstances. But as the efficiency of a particular method may depend not only upon the age, character, and attainments of the pupils, but also upon the peculiar adaptation of the method itself to the mind and capabilities of the teacher, it is necessary that these conditions should be fully recorded in the register. If sufficient data of this kind were collected, we should then be able to arrive at the following generalisations with considerable certainty:—

1. Under a certain range of capabilities of the teacher, and under a certain average condition of intelligence on

the part of the pupils, what method, or combination of methods is best adapted for teaching certain given subjects.

2. What method, or combination of methods, is best adapted, under ordinary circumstances, to a teacher of given qualifications and capabilities.

3. What method, or combination of methods, is most suitable, under ordinary circumstances, for the instruction of boys of a given age, character, and attainments.

4. What qualifications and capabilities are best calculated to form a good teacher.

The following are some of the systems and methods most eligible for being tested in this way:—

1. The comparative advantages of the individual and collective methods of teaching. To what extent should individual instruction be carried, when combined with the method of collective teaching? and, in what subjects may the respective methods be most efficiently employed?

2. The comparative advantages of the synthetic and analytic methods, applied to the teaching of different subjects.

3. The method of suggestive interrogation compared with the dogmatic method, or with the purely elliptical form of giving collective lessons.

4. The familiar style of lecturing, on the best recognised form, compared with the plan of using reading books or text books. Or the comparative efficiency of a system, which adopts certain advantages belonging to each.

5. The advantages arising from home instruction, when associated with certain forms of teaching.

6. Comparison of different modes of teaching children to read, or to write, or to spell.

I have used this plan of registration in connection with the model lessons, which I have had occasion to superintend; and it has led me to several important generalisations relative to methods of instruction—to their adaptation to the minds of different masters — and to their suitableness to different classes of pupils; and also with respect to those qualifications, &c., on the part of the master, which are most likely to form the superior teacher. It is not improbable that some of these generalisations may not have been based upon a sufficient number of facts, or that they may not have embraced some hidden circumstances, which might vitiate the deductions. Be this as it may, they constitute the chief results of the experience of my life as a practical educator.

GENERAL CONCLUSIONS DERIVED FROM THE WRITER'S REGISTRATION OF THE RESULTS OF METHODS, &c.

1. *Relative to Systems of Teaching.*

1. Comparatively few men teach well upon the elliptical plan of giving lessons. The efficiency of this plan is much increased by being associated with direct interrogation. Bible lessons are peculiarly adapted to the elliptical form of teaching.

2. It is much more easy to lecture than it is to teach. Lecturing, especially in an elementary school, should always be accompanied with a close system of questioning.

3. Collective teaching is most efficient when it is followed by individual instruction — by individual examination — or by the reproduction of the subject-matter of the lesson in writing by the pupils.

4. Oral instruction, given in the form of familiar lectures, by a superior teacher, is in general a much more efficient mode of instruction than the plan of teaching from reading-books or text-books, even when accompanied with an analysis of the subject-matter which has been read by the class.

5. Suggestive modes of interrogation should never be employed as tests of progress. The questions which we use for the purpose should not contain the slightest clue to the answer.

6. As a general rule, having some important exceptions, the progress of the pupils is in proportion to the apparent amount of attention which they give to the lesson or lessons.

2. *Relative to the Qualifications of the Master.*

1. Teachers of limited capacity, or whose command of language is limited, invariably teach best with text-books, or by the individual system of instruction.

2. Men of fervid imaginations, having a great command of language and enthusiasm of character, almost invariably become superior teachers.

3. Decision of character almost invariably forms an element in the qualifications of a superior teacher.

4. Men who are deficient in general knowledge and in enthusiasm of character, are generally bad teachers, even though they may possess great technical acquirements.

5. An earnest man, imbued with the love of children, is rarely a bad teacher.

6. The love of teaching is generally associated with the capability for it; but the converse does not so frequently hold true.

7. A man of superior teaching power teaches well by any rational method. But he will always teach best by that method which is suited to his peculiar capabilities.

8. Men generally teach badly when they attempt to teach too much, or when they do not duly prepare their lessons.

9. Presence of mind, and that self-confidence which is based on self-knowledge, are essential elements in a good teacher's character.

10. Success in teaching is more dependent upon the capabilities of the master for teaching, than upon his technical acquirements. Teaching-power is not always associated with superior talents or great acquirements.

11. A teacher must practise a new method until he is fully master of it, before he can come to any conclusion as to its efficiency. Teachers are too prone to attribute their failures to the method they employ, rather than to the improper way in which they use it.

12. The best methods are the worst instruments which can be put into the hands of incompetent teachers. The best and most intellectual methods require a corresponding skill on the part of the teacher, to use them with efficiency.

3. *Relative to the Pupils.*

1. The more exciting modes of instruction are best suited to phlegmatic children, or to the children of the poor. Children of precocious minds do not require exciting modes of teaching.

2. Collective teaching associated with individual questioning, &c., should invariably be used in teaching boys from six to twelve years of age. The advanced boys should have a larger amount of individual teaching.

3. Evening exercises, when the parents are able and willing to co-operate with the teacher, add greatly to the efficiency of school instruction.

4. Children, in manufacturing and mechanical districts, evince considerable aptitude for acquiring a knowledge of geometry, mechanism, and construction. Indeed, as a general rule, the predilections of children have a leaning towards the pursuits of their parents. School routines should always have a due regard to the tastes, wants, and capabilities of the pupils.

Forms of Entry in the Register.

Where there are a great many entries to be made in the columns of a school register, it becomes desirable that we should have some concise and graphic mode of symbolising the results which are to be recorded. The symbol which I have adopted to express any word, is simply the first letter of the word, and, where ambiguity may arise, the first two or the first three letters of the word. The numerals, 1, 2, 3, are used to express the amount of any qualification, or the extent to which any plan or method may be carried. These numerals, affixed to any symbol, expressing a particular qualification, indicate the amount or degree of that qualification, that is to say, whether it is moderate, fair, or excellent. Teachers, of course, will modify or extend these symbols to suit their convenience, or they may perhaps find it most convenient to adhere to the ordinary form of registration. These symbols, it will readily be understood, do not form an essential feature of the proposed plan of registration.

Form of School Register for recording the Results of different Methods of Instruction, and also for testing the Capabilities of different Teachers in relation to these Methods.

TEACHER						PUPILS.					REMARKS.		
1 Name of Teacher.	2 Qualifications, &c.	3 Subject of the Lesson.	4 System used by him.	5 His skill in relation to the System.	6 Time of Lesson or Lessons.	7 Average Age.	8 Average Attainments.	9 Pursuits of Parents, &c.	10 Attention.	11 Average Progress under te System.	12 School Architecture.	13 School Apparatus.	14 Incidental Remarks.
A. B.	K.$_2$ M.$_1$ F.$_2$ m.$_2$ k.$_2$	Ar.	Sy.$_2$ De.$_2$ I.$_2$ E.$_1$ B.$_2$	2	¾ hour.	10 yrs.	1	Chiefly Agricultural.	3	3	Gallery with Desks.	Black Board Slates.	No. in Class, 18.
C. D.	K.$_1$ M.$_2$ F.$_1$ m.$_1$ k.$_3$	P.	Sy.$_3$ Exp.$_2$ I.$_1$ E.$_2$ B.$_1$	2	Four Lessons, ½ hour each.	12 yrs.	3	Tradesmen, Intelligent.	3	2	Gallery with Desks.	Household Articles.	No. in Class, 24. A little Apparatus useful.
"	"	"	"	"	"	"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"	"	"	"	"	"	"

Key to the Symbols used in the Register.

1—moderate, or low. 2—good, or fair. 3—excellent, or high. Al.—algebra. An.—analytic. Ar.—Arithmetic. B.—use of the black board. D.—discipline. De.—demonstrative. E.—elliptical. En.—enthusiasm. Ex.—examples, or illustrations. Exp.—experimental. F.—fluency of speech. G.—geometry. Geo.—geography. Gr.—grammar. H.—history. I.—interrogative. K.—general knowledge. k.—knowledge of the particular subject, &c. M.—mathematics. m.—manner pleasant. N.—natural philosophy. P.—experimental physics. R.—reading. S.—scripture. Sy.—synthetic.—T.—teaching power generally.

Application of the Symbols.

For example, if the general knowledge of the teacher, A. B., is good — mathematical acquirements moderate,—fluency of speech, fair — style of teaching, very pleasing — knowledge of the subject of the lesson, good, and lesson well prepared; then we should enter the following symbols in column 2. of the register: — K.$_2$ M.$_1$ F.$_2$ m.$_2$ k.$_2$ The entry in column 4. reads as follows: — A. B. made a fair use of the synthetic and demonstrative system of instruction; fair use of the interrogative system, combined with a moderate use of the elliptical; good use of the black board.—The entry in column 5. indicates that the teacher is well skilled in the particular system. The entry in column 10. indicates that the boys were very attentive to the lesson. And so on.

Again the entries made in relation to C. D. read as follows. Column 2.: general knowledge, moderate—mathematics, good—fluency, moderate—manner, moderately pleasing—knowledge of the subject, excellent. Column 3.: subject, experimental physics; may be chemistry, for example. Column 4.: highly synthetic—experimental illustrations, good—moderately interrogative, and more elliptical—black board, moderately used. Column 5.: teaches on the method well. Column 8.: average attainment of the class, excellent. Column 10.: the pupils highly attentive. Column 11.: average knowledge gained by the class, good. And so on.

PART IV.

ON THE APPLICATION OF DIFFERENT SYSTEMS AND METHODS TO THE VARIOUS BRANCHES OF ELEMENTARY EDUCATION.

THE SCRIPTURES; HISTORY; &c.

Bible lessons should always be given, in an elementary school, on the collective system of teaching. The following rules may be advantageously observed in giving these lessons.

1. The passage on which the lesson is given should be read by the class. In the course of the reading, the meaning of the words should be familiarly explained to the children, and the general purport of the lesson should be constantly kept before them.
2. The teacher should picture out the subject-matter of the lesson, after the manner described in connection with the cultivation of memory (see p. 195.). This will, generally, be best done by the method of ellipses, occasionally varied by individual or collective interrogation.
3. The subject should be elucidated by the method of contrasts and resemblances (explained in connection with the cultivation of the memory, see p. 187.).
4. The progress of the class should be tested by the individual method of examination.
5. The duties to be learned from the lesson should be fully explained. This will, generally, be most efficiently carried out, by the method of suggestive interrogation, or by the method of ellipses.
6. Notes of the lesson should be written, with conciseness and distinctness, upon the black board.

Sketch of a Bible Lesson. — Subject: Trial of Abraham's faith. Genesis, chap. xxii., verses 1 to 13. Mixed method: interrogative, elliptical, illustrative, &c.

1. *The reading lesson.* Words and phrases to be ex-

plained in the course of the reading: — The land of Moriah, burnt-offering, worship, &c.

2. *The picture.* [The words to be supplied by the pupils are printed in italics.]

Abraham was a very good man, and had great faith or trust in his *God:* Abraham had one *son* called *Isaac,* one darling boy, that he loved more than anything in the *world:* Abraham was very happy with his son *Isaac*[*]*:* God was about to put Abraham's faith and obedience to a very great *trial:* Let us see how God tried Abraham's *faith* and obedience. God told Abraham to take his son *Isaac* to a mountain a great way off, and offer him there for a *burnt-offering.* Oh! what a trial for Abraham's obedience this was, to slay his only *son* as he did lambs and calves and rams, upon the altar as a *burnt-offering.* But Abraham loved and feared *God,* so much, that he never doubted, for one moment, that whatever God commanded him *to do* would be for his *good,* — he did not even ask why he was to slay his *son,* because he was sure that God had a good *reason* for what he required him *to do.* Abraham then got up early in the *morning,* and saddled his *ass,* and took two of the young *men* with him, and Isaac his *son,* and cut some wood for a burnt-offering, and started off towards the *place* where God had told him *to go.* After they had travelled for three *days* and three nights, they at last came in sight of the mountain: Abraham lifted up his *eyes* and saw the *place* afar *off.* And he told his young *men* to stop and take care of the *ass,* while he and his *son* went up the *mountain.* Behold Abraham and his *son,* as they climb the mountain; — Isaac carries the heavy burthen of wood for the *burnt-offering,* and Abraham carries the fire to kindle the *wood,* and in his hand is the terrible knife with which he is to slay his only *son* as an offering to the Lord; — how sorrowful Abraham looks, — God has commanded him to offer his *son* as a burnt-offering. Isaac seems at a loss to know what his *father* is about to do with him. When they came to the *place* which God had *told* Abraham of, Abraham laid the wood in *order*, and bound his *son* and laid him upon the *altar*. His hand is stretched forth,— and he is about to plunge the knife into his *son*, but the angel of the *Lord* arrested the stroke, saying to Abraham out of *heaven*,—"Now I know that thou fearest *God*, seeing that thou hast not withheld thy *son*, thine *only son*, from me."

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[*] If the pupils do not fill in the ellipses, the teacher should ask the question,—

"What was the name of Abraham's son?"

3. *Contrasts and Resemblances.*—Contrast Abraham's character with that of Balaam's or with that of Jonah's. Compare Abraham's readiness to sacrifice his only son at the command of God, with the great sacrifice which Christ offered up, upon the cross, for the sins of the world.

4. *Examination.* To what land did God command Abraham to go to offer up his son? How was Isaac to be offered? For how many days did they travel before they came in sight of the mountain? Who went with Abraham to the place of sacrifice? What did he say to the young men before he left them? &c., &c.

5. *Duties to be learned from the lesson.* When we are sore beset with trials, what should we always do? However hard our lot in this *world* may be, our duty is simply to obey *God*, who always knows what is best for us. If we simply follow the commands of *God*, however strange they may appear to our corrupt nature, He will find a way of escape *for us*. God often tries our faith as He did Abraham's of old, by requiring us to perform painful *duties*, but we, like *him*, should *obey God* and leave the results in His *hands*, knowing that all *things* will at last work out for the *good* of them that fear Him.

6. *Notes written on the black board.* God's command to Abraham,—given to try his faith;—his journey to Moriah;—Abraham and his son went alone to the place of sacrifice;—the angel of the Lord prevented Abraham from slaying his son; &c.

HISTORY AND SUBJECTS OF GENERAL READING.

History, and other subjects of general reading, should be taught by the same method as that which we have just described in relation to the teaching of the Scriptures.

READING AND SPELLING; ETYMOLOGY; GRAMMAR.

These subjects should be taught, in our elementary schools, upon the collective system of instruction. While one boy reads or spells, the other boys must listen. Important passages should be read simultaneously by the class, and sometimes words should be spelt, letter after letter, in the same manner. In the course of the reading, the master will frequently have occasion to correct the pronunciation, indistinct utterance, the accent, and the intonations of the pupils. Whenever he does so, he should always endeavour to put his reasons into the form of a general rule. Above all things the pupils should be taught to read with intelligence.

Very young children should be taught to read from large class-cards, having pictures of the leading subjects of each lesson. *The look and say* plan of teaching to read is certainly the best, especially when it is combined with some of the most striking principles of the phonic method. In like manner the best plan for teaching children to spell is, to get them to write out the lessons which they have read; the eye, in my opinion, is a better guide to correct spelling than the ear. The lessons for teaching little children to read should contain frequent repetitions of the same word in each lesson. Let us take an example:

Specimen of a Reading Lesson for little Children.

Tom is a good boy. A good boy does what he is told. I told Tom to be good. John is a bad boy. A bad boy does not do what he is told. And so on.

When the child is able to read words of three letters, he should then be taught to read words of four or more letters; and after words of one syllable he should be taught to read words of two syllables; and so on.

In the course of these reading lessons, the intelligent teacher will not fail occasionally to avail himself of some of the most prominent principles of the phonic system of reading. Certain combinations of letters almost invariably represent certain elementary sounds; as for example,—the sound of *ad*, in bad, lad, sad, mad, &c.; the sound of *ay* in bay, lay, say, may, &c.; the sound of *un* in bun, sun, &c.; the sound of *sh* in shut, shark, shave, shall, &c.; the sound of *ch* in child, chide, chick, &c.; and so on.

The ordinary box of reading letters should be used in showing the child how the elementary sounds go to form the sound of the word. Thus in showing the sound of the word *shave*, the teacher first gives the sound of the letters *sh*, next that of *ave*, and then putting the letters together he gives the compound sound *shave*.

To follow out the phonic system of reading, in all its details, is neither practicable nor desirable. The fact is, this system requires the pupils to make analyses of sounds, which we ourselves never do in the practice of reading. The rules of pronunciation in our language are so very complicated, that it seems to be almost ridiculous to attempt to teach reading on a strictly phonic plan. By the practice of reading, on the *look and say* system (aided by occasional hints relative to the elementary sounds of the most common combinations of letters), the child gradually and insensibly acquires the pronunciation of words. On the teaching of the alphabet, see page 186.

The etymology of technical words and philosophical terms (particularly those that are derived from the Greek and Latin) should be given in connection with reading lessons. But the teacher should bear in mind, that the derivation of a technical term does not supersede the necessity of giving the full meaning of the term, as it is used in our language; the chief purpose which etymology serves, in the elementary school, is to aid the pupils in remembering the signification of technical terms. Important words and phrases, which occur in the lesson, should be written, in large characters, upon the blackboard, with their meanings and derivations.

Grammar should also be taught in connection with the reading lessons. But besides such desultory exercises on Grammar, the definitions and principles should be systematically taught by collective lessons, and by simple textbooks upon the subject.

GRAMMAR MORE FULLY CONSIDERED.

Grammar may be taught by a constructive method, or by a method of progressive development. A first course of instruction should comprehend all the simple parts of speech without their inflections, &c.; the particular and most familiar form of each definition should be explained before the general or most abstract form; and where the definition contains a comprehensive statement, it should be broken down into its component parts, and after each part has been successively explained, their relative connection, or dependence, should be distinctly pointed out. A second course of grammar should comprehend the inflections of words; and a third course that of the analysis of sentences and the rules of syntax and composition. These rules should be based on the analysis of sentences; for by so doing we follow one of our most certain general principles of method, viz., that of teaching the concrete before the abstract. We have too much parsing in our schools, and too little of the practice of composition. Teachers should get their pupils to construct sentences as early as possible; for it should be borne in mind, that parsing is only a means for the attainment of an end, that is, to enable the pupils to write and speak with accuracy and facility. All our exercises in composition should have some actual object, they should express familiar ideas, or describe things and events which actually exist; see page 149. The old plan of teaching syntax (that is, by giving bad English to correct under each rule) has not yet been superseded. In grammar, as in many things else we seem to know what is right by seeing what is wrong; and we are the better able to follow what is right, by constantly endeavouring to avoid what is wrong.

A lesson on Grammar. Subject — The noun. Mixed method, interrogation, ellipses, &c.

Now, my children, I am going to show you what a noun is. Listen!

A NOUN is the name of an OBJECT or THING; as, book, apple, table, &c.

Hat is the name of a *thing,* — what kind of word is hat? Write the following sentence on your slates: "Pears and apples grow on trees." Now put a line below all those words which are nouns.

A NOUN is the name of an ANIMAL; as, dog, cat, horse, &c.

Cow is the name of an *animal;* therefore, the word cow is a *noun.* And so on to other examples.

A NOUN is the name of a PERSON; as, John, Thomas, Milton, &c.

Andrew is the name of a *person;* therefore, the word Andrew is a *noun.* And so on to other examples.

A NOUN is the name of a PLACE; as, London, York, Leeds, &c.

Hounslow is the name of a *place;* therefore, the word Hounslow is a *noun.*

A NOUN is the name of anything which we can SPEAK of as existing; as, chair, whiteness, darkness, &c.

I can speak of table as a *thing* which exists; therefore, the word table is a *noun.* I can speak of the soul as existing; therefore, the word soul is a *noun.* And so on.

Now let us collect together all that has been said about a noun.

A NOUN IS THE NAME OF AN OBJECT, AN ANIMAL, A PERSON, A PLACE, OR ANYTHING WE CAN SPEAK OF AS EXISTING.

Give me as many words as you can think of, which are nouns.

Why is the word BOOK a noun? Why is the word HEAVEN a noun? And so on. Put a mark beneath al the nouns in the following sentences:—Thomas has got a dog. London is a large city, &c.

A lesson on Grammar. Subject—The adjective. Mixed method.

An ADJECTIVE is a word which points out the QUALITY of a noun; as, large, good, black, &c.

I have a *sharp* knife. Now what word here points out the quality of the knife? Sharp, then, is an adjective, for it points out or expresses the quality of the knife.

He gave me some apples. Now all the words which I put before the word apples to make sense are adjectives,—find out as many of these as you can. *Small*, *large*, *round*, *ripe*, *unripe*, *sour*, *red*, *sweet*, &c.

An ADJECTIVE LIMITS the meaning of a noun; *this*, *many*, *fourth*, &c. And so on.

Now let us collect together all that has been said about an adjective.

AN ADJECTIVE IS A WORD WHICH POINTS OUT THE QUALITY OF A NOUN, OR LIMITS ITS MEANING.

Put a mark beneath all the adjectives in the following sentences:—

A horse is a noble animal. The cow gives fine milk.

Why is the word *the* an adjective? Why is the word *noble* an adjective? And so on to other examples.

Lessons on composition and the analysis of sentences.

1. To enlarge the *subject*. Simple sentence.—"The dog is ill."*

What is the subject of this sentence? What is the predicate?

Now I shall enlarge the subject of this sentence, that is to say, I shall add something which shall tell us all about the dog.

"The dog is ill."
1. The *large* dog is ill.
2. The dog, *Pompey*, is ill.
3. The *carrier's* dog is ill.

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* Here we suppose this to be really a fact.

4. The dog *of four years old* is ill.
5. The dog, being very fat, is ill.

And putting all these enlargements of the subject in one sentence, we have —

The *carrier's large* dog, *Pompey, of four years old, being very fat,* is ill.

What purpose is served by these enlargements of the subject? What do they tell us? First, that the dog is large; second, that his name is Pompey; third, that he belongs to the carrier; fourth, that he is four years old; and fifth, that he is very fat. What kind of word have I used to enlarge the subject in No. 1? The adjective large. And so on to the others.

Enlarge the subject of the following sentence; first, by an adjective; second, by a noun in opposition; and so on: "The boy reads."

2. To extend the predicate. Simple sentence.— "The boy reads."

The predicate may be extended in the following different ways: —

"The boy reads."

1. The boy reads *fluently.*
2. The boy reads *for information.*
(b) The boy reads *at home.*
3. The boy reads *every day.*
4. The boy reads *standing.*

In (1) the predicate is extended by an *adverb;* in (2) by a *preposition* or by a prepositional phrase; in (3) by a noun in the objective case; in (4) by a *participle* used adverbially.

In (1) and (4) we use an adjunct of manner; in (2) an adjunct of cause; in (b) an adjunct of *place;* in (3) an adjunct of *time.*

Show the different ways in which the predicate in the following sentence may be extended: "The boy runs."

Point out the subject, predicate, and object of the following sentence: "A *bad* boy, *called Thomson,* hurt *little* William *very severely.*" What words enlarge the subject? What word qualifies the object? What words extend the predicate?

Observation.—Proceeding in this way, the pupil will be taught the art of composition. But in all this there is comparatively little knowledge of parsing required.

ARITHMETIC.

All the junior classes, in an elementary school, should be taught arithmetic on the collective system. The synthetic method of demonstration, first explained, at least in this country, in the writer's treatise on the Principles of Arithmetic, is certainly the best adapted for elementary instruction. The suggestive method of interrogation is most generally applicable to the teaching of demonstrative arithmetic.

In teaching common or slate arithmetic, the following general rules should be observed:—

1. All the demonstrations should be given distinctly upon the black-board.
2. The essential data of the question (not the whole question) should be written, in a proper order, on the black-board, especially when the question contains three or more data.
3. The teacher should fully explain every step of the process as he writes it down. It is a bad plan to work out the whole question, and then to proceed with the explanation.
4. The pupils should take a part in the investigation. The master should require them, time after time, to tell him what quantities he must write down, at the different steps of the investigation.

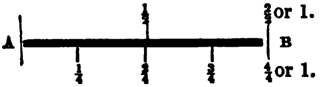
Let us take a few examples of this method of teaching arithmetic.

1. *Lesson on the Addition of Fractions.*

Let it be required to add one-half and three-fourths together.

Here, before we can add these fractions together, we must bring them to the same part of unity, or, to speak more simply, we must bring them to bits of the same size. Let us suppose that we have to find how much the half of a loaf added to the three quarters of a loaf will make. What do I take as the unit here? (Ans. A loaf.) Now, how do we get the half of a loaf? (Ans. By cutting it into two equal parts.) How do we get the three-fourths of the loaf. (Ans. By cutting the loaf into four equal parts, and taking three of them.) Now, how should you put the half bits into quarter bits? (Ans. By cutting each half into two equal bits, for then we should have the whole loaf cut into four equal bits.) Very well. Now, how many fourths will there be in one half. (Ans. Two fourths.) So that you have to put together, or add, two fourths and three fourths. What will they make? (Ans. Five fourths.) But I want you to give me the sum in mixed numbers. How many whole loaves would you have in five quarter loaves? (Ans. One and a quarter more.) That is to say, the sum of one half and three quarters will be equal to *one and a quarter*.

I am going to show you how to do this question in another way.



Let a stick or a line (A B) be divided on the upper side into two equal parts, and the bottom side into four equal parts. What will each of the upper parts be called? What will each of the bottom parts be called? Look at the figure, and tell me how many fourths there are in each half. And so on, as before.

The teacher should also do the same thing by the division of a space.

2. *A Lesson on Rule of Three.*

Let it be required to find the cost of 9 books, when the cost of a dozen is 8*s.* 1*d.*

Let us first write the essential data of the question on the black-board.

DATA.

Cost of 12 is 8*s.* 1*d.* — the cost of 9 is required.

SOLUTION TO BE WRITTEN ON THE BLACK-BOARD.

$$\text{Cost 12 books} = 8s.\ 1d.$$
$$\therefore \text{Cost 36 books} = 3 \text{ times } 8s.\ 1d. = 24s.\ 3d.$$
$$\therefore \text{Cost 9 books} = \text{one fourth part of } 24s.\ 3d. = \frac{24s.\ 3d.}{4} = 6s.\ 0\tfrac{3}{4}d.$$

After the teacher has written down the language, "Cost 12 books =" he asks the class — "What shall I put this equal to?" After he has received the answer, he fills it in, and then asks—"Why is it equal to 8*s.* 1*d.*?" "How many books have we to find the cost of?" "Now if we can get the cost of 36 books, we may readily get the cost of 9, as you will see, when we proceed with the solution." After writing down "Cost 36 books =" he asks,—"Will the cost of 36 books be more or less than the cost of 12 books?" "Why?" "You are quite right, three times the number of books will cost three times as much." "Now having got the cost of 36 books, how are we to get the cost of 9?" "Exactly so, — one-fourth the number will of course cost one-fourth the price." And so on.

The more advanced boys should be sometimes called upon to give a demonstration on the black-board.

MENTAL ARITHMETIC.

This subject should be taught on the collective system, in connection with the method of interrogation. The boys prepared with an answer to the question proposed by the master, should hold up their hands, and the master must then call upon some boy to give the answer; and so on to the other artifices described in connection with the subject of collective teaching. Young children should be practised, for some time, in mental calculation, before they are taught anything relative to the symbols and notation of numbers. Strokes, counters, balls, &c., should be taken as the representatives of numbers, and all the leading properties and operations of arithmetic should be demonstrated by the use of these objects, before any technical modes of calculation are attempted. All the processes should be thoroughly demonstrative, and no rules should be laid down independently of the investigations. All tricks and clap-traps of mental calculation should be conscientiously avoided. The boy called upon to give the answer should give the process of investigation.

GEOGRAPHY.

Geography may be thoroughly taught, to large classes, on the collective system. The method of suggestive interrogation, followed by or accompanied with catechetical examination, seems well adapted for teaching this subject to all classes in an elementary school. No branch of geography should be taught without the aid of a map. Every collective lesson on geography should be given in connection with a large map, which should be suspended directly before the class. When any country, or city, or river, or mountain, is spoken of, its place upon the map should be pointed out, and its relative bearings, boundaries, or extent should be fully explained. Physical geography and history should always be taught in connection with descriptive geography. (See p. 194.)

If a teacher can sketch well, he should draw his own maps upon the black-board—First, tracing the outline of the country, he mentions the various kingdoms or seas whose boundaries his chalk is tracing; second, with a few jottings of his chalk he marks out the principal mountain ranges, forming the great ridges or apexes of the watersheds;—third, he traces the rivers winding their way from their mountain source or sources to the great reservoirs of the waters of the globe. He pauses for a moment to review his work,—he has sketched out the works of nature as the hand of the Creator has left them; now he has to begin to sketch the works of art and civilisation—he has to people the wilderness, and to trace the progressive steps of civilisation; upon the banks of the tidal rivers, he marks the site of the great mercantile cities; on the shores of the mountain streams he plants the names of the oldest industrial cities; on the coal fields he places those mighty manufacturing cities which have almost sprung into existence since the discovery of the steam-engine — that mightiest monarch of civilisation and power, which seems to control the destinies of the world; last of all, he marks the sites of those large towns which form the market places of the rural population. We said that the work was progressive,— every fresh touch of the chalk is associated with some new idea, and every fresh idea has its appropriate association with some line or mark upon the board; — the sketch goes on,— it becomes more and more finished;— the skeleton becomes lined with sinews, then clothed with flesh and blood; — every fresh step towards completion excites new interest in the minds of the boys, — they wonder how a few jottings can call up the idea of a mountain range, or how a winding line can call up the idea of the course of the sparkling river, or how the little mark put for the mountain city should awaken, in their imaginations, the sound of the flip flap, flap flip, of water mills, and the busy hum of industry; they wonder, but they know not, that the visible picture which their master has drawn, with his chalk, would be dull and lifeless, without the living moral picture with which it is associated. Such a lesson is complete in its parts and perfect as a whole. It is a complete exemplification of what has been called the *constructive method* of teaching.

Map drawing is an excellent means of teaching geography. This exercise, as we before observed, should be set apart for home lessons.

DRAWING.

Collective teaching, combined with the system of home studies, is best adapted for giving lessons on this important branch of school education. As this truly useful branch of knowledge does not appear to have received that amount of attention, in our schools generally, which its utility demands, we shall enter more fully into the details of the method by which it should be taught in our elementary schools.

1. *The teacher should first explain the elements of form.*

Drawing, like all other branches of instruction, has its simple elementary principles; these principles should be learnt by the pupil before he can be expected to make any satisfactory progress.

All drawing must be based upon a knowledge of the elements of form. Before a boy can draw a line correctly he should know something about the nature of that line.

All forms, whether in nature or art, may be reduced to a few geometrical elements.

STRAIGHT LINES should be copied of various lengths and positions, and next in order should follow the various geometrical figures formed by straight lines.

The CIRCLE is the simplest and most perfect of all CURVED LINES; it, in fact, forms the standard by which we judge of the relative degree of curvature of the various portions of any other curved line. To draw a circle by the hand requires some skill; and the acquisition is well deserving the trouble. Curves of contrary flexure, that is, curves which are convex at one part and concave at another, have been called the lines of beauty. Examples relating to the circle, with various curved figures more or less depending upon it, should be given to the pupils.

These elements of form constitute THE ALPHABET OF DRAWING. No satisfactory progress can be made in drawing until the pupil has become thoroughly acquainted with these forms. You may as well attempt to teach a boy to read before he is acquainted with his alphabet, as give him an axe, or any such object, to draw before he is made acquainted with the different kinds of lines found in its outline.

In this way drawing is made a useful instrument of a higher kind of instruction; for the pupil is insensibly, and at the same time pleasantly, made acquainted with the names and properties of geometrical figures. Why should the boy, who is supposed to be skilful enough to draw a chair or a looking-glass, remain ignorant of the names of the geometrical elements of form? A child of five years of age readily learns the names and understands the construction of the most useful geometrical figures; and not only so, but he really feels a pleasure in learning them. Now the best way of learning the names and definitions of geometrical figures is actually to draw them. Children feel as much pleasure in drawing beautiful geometrical forms, as they do in imitating the drawings of natural objects, more especially if they are taught to draw these geometrical forms by method.

The teaching of the first facts of geometry ought to be considered as one of the most important ends which is to be attained by an elementary course of drawing lessons. It is not practicable, and, indeed, it is not desirable if it were practicable, to teach drawing without embracing a certain amount of geometrical knowledge.

The pleasure of success is the best incentive to the pupil in learning to draw; but if the exercises are too difficult for him, he will give up in despair, believing that he has no genius for drawing. A teacher gives a boy as a first lesson, a drawing of an Ass to copy;— the boy labours earnestly at his task, for he really would like to draw a donkey, but notwithstanding his repeated efforts, he cannot decidedly say whether his drawing is more like a horse than it is like a donkey. That boy should first learn the alphabet of drawing — the leading elements of forms — before he attempts to copy such difficult pictures.

2. *The teacher should explain the various lines of construction necessary for drawing a figure.*

In these lines of construction we bring principles to aid the eye and the hand. The facility and accuracy with which an artist will copy any drawing depends not more upon his skilful command of the pencil, than upon the method which he adopts, unconsciously it may be, in determining the leading points of the outline of the drawing. The figure or model to be drawn should be first examined as a whole, and then the leading points as well as the general outline of the drawing should be laid down, before any of the minute or subordinate parts are attempted. All beautiful figures have symmetry; and, therefore, in constructing such figures, there may always be found some geometrical forms which will aid us in the construction. The habit of constructing figures in this way, besides serving the end for which it is directly intended, tends very much to improve the observing and reasoning powers of the pupil; it insensibly and gradually instils into the young mind a knowledge of geometrical principles, and lays the foundation of a more demonstrative course of geometry. Let us take a few illustrations.

A pupil having to draw an octagon for the first time would scarcely know how to begin it; but a glance at the teacher's lines of construction should give him the idea of a method which will enable him to draw the figure with facility and precision.

Few persons, even amongst artists, can draw a perfect ellipse by the hand; but by attending to a few simple principles of construction it becomes easy even to a pupil.

All points and lines of construction should be drawn faintly, in order that they may be readily erased, and that they may be easily distinguished from the real lines of the drawing. For various illustrations of the methods of construction, the reader may consult the writer's work on Drawing.

3. *The teacher should explain the manner of using the pencil or crayon.*

The drawing pencil, or crayon, as the case may be, should be held in the same manner as the common writing pen. In order to give freedom of motion to the hand, the pupil should be accustomed to hold the pencil loosely, with the first two fingers and the thumb at some distance from the point. Every line should be seen as it is being drawn, and, in order to secure this, all lines should be drawn from left to right, and from the top to the bottom of the paper. As a general rule, lines should be first sketched out faintly, and then any inaccuracies can be corrected as the line is being finished off. The beginning and the end of a line should be fixed before the pupil commences to draw it. Certain intermediate points should also be fixed before the whole line is attempted to be drawn. Great precision cannot be expected from young persons at first, nor should they be required to dwell too long upon any particular drawing at this early stage of their instruction; the patience of a child should never be worn out by a fastidious regard to what is called accuracy of finish. The fact is, there is a want of flexibility in the muscles of the hand of young children, which time and nature only can fully remedy.

4. *Proper drawing instruments and materials should be provided for the pupils.*

The pupils should be provided with slates, drawing-books, or drawing paper. If slates are used, the pupil should draw with a long, soft slate-pencil. Black-lead pencils, as well as common slate pencils, if used in drawing, should be well pointed and of sufficient length to be used with freedom. If crayons are adopted, they should be of different degrees of hardness, and fixed in a port-crayon, one at each end. Some teachers may prefer pen-and-ink drawings; this mode of drawing is exceedingly useful and convenient for schools; in this case, the drawings may be first traced with black-lead pencil, and then afterwards completed with the pen and ink. Each pupil should be provided with a copy of some drawing exercises*, so that he may, at certain periods, go on with his work without the constant supervision of the master.

5. *The pupils should then draw the outlines of familiar objects.*

After the pupil has been made acquainted with the leading elements of form, he will find much interest in tracing the outlines of familiar objects. Outline drawings, it will be observed, are not really representations of the objects, for they want the touches of light and shade, as well as some other artistic artifices, requisite for forming a true picture. Notwithstanding this, the drawings are sufficiently *like* the objects which they are intended to represent, so as to interest the child in the resemblance. The pupil should first copy from the drawing of the object, and then he should have the object itself placed directly before him to be drawn in outline. The master should carefully explain to his pupils the different geometrical forms to which the various parts of the outline drawing may be referred.

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* See Tate's "Drawing-Book for Little Boys and Girls," containing upwards of one hundred and thirty drawing exercises. Price 1*s*. 6*d*. Longman and Co.

6. *The teacher should explain the method of drawing a figure on the black-board.*

The teacher should construct the figure (which his pupils are about to draw) on the black-board, ON AN ENLARGED SCALE. All the lines of construction should be explained by him as he draws them, and all the pupils should go along with him, drawing line after line as their master proceeds with his exposition. After such explanations, the master may leave his pupils for a time to copy the drawing from their sheets with more care and exactness. The impetus which the master thus gives to his class will be sufficient to render it self-acting for the time which he may require to bestow on the other classes in the school.

When a model is to be drawn, it should be placed before the pupils in a position similar to that in which it is given in the drawing copy: the master should then show the pupils *how* and *why* he draws the different lines in his representation.

There are a few important points upon which children require to be especially guided. In drawing vertical lines, they are very liable to make the lines lean in the same direction as the lines of ordinary writing. Children should constantly have their attention directed to the proportion of the parts of a figure; as, for example, a line in a drawing may be exactly the same length as another line, or it may be twice or thrice the length. The position of lines should be carefully noted; as, for example, one line may be perpendicular to another line; or a line may be drawn exactly between the vertical and the horizontal; or a line may rise to the left of the horizontal; and so on. They are very apt to draw a line before its exact position has been realised in their own minds. Children, if left to themselves, will often begin with some unimportant detail, and thus go on drawing without method; here the master should show the child what lines to begin with, how to get a good general outline, and then how the minute parts should be finished off.

7. *The teacher should carefully inspect the work done by the pupils.*

While the pupils are at work, the master should move rapidly amongst them, giving hints to some, correcting the errors of others, and in all cases showing them how they should do it, rather than actually doing it for them. A few minutes at the close of each lesson should be devoted to the examination of the slates or books of the pupils. The drawings done at home should also be carefully examined by the master.

8. *The master should give his pupils drawing copies for home exercises.*

Our present systems of elementary education seem to make too little provision for home instruction.. Drawing at home is admirably adapted for supplying the place of evening tasks, which were once given in the form of columns of spellings, or paragraphs of geography. Drawing is rather an amusement than a task, and children need very little persuasion to induce them to devote some portion of their leisure time to this delightful study. In home studies especially, children like to show some evidence of their application, with the view of comparing the work of one week with that of another.

Exercises on drawing, as we have already observed, are well calculated to effect this end.

9. *The more advanced pupils should draw the figures upon an enlarged scale.*

Young persons can draw small figures much more easily than they can draw large ones. Their eye more readily catches the proportions of small figures than of large ones; and their hand is better able to draw short lines than long ones. Children have a more perfect perception of an object of moderate size than they have of a large object; the eye takes in all the parts of the object more readily in the former case than in the latter case, and thus a more perfect picture is formed upon the retina. Hence it is in accordance with nature, that a young person should first copy moderate-sized drawings, such as those given at p. 310 and 311 of this book, before he attempts to draw upon a large scale. But after he has drawn the figures upon a small scale, he should then draw them upon a scale of twice, thrice, or even four times the size. The drawing of figures on a large scale gives freedom and power to the hand, and precision to the judgment. But, besides this, the drawing of figures on different scales forms one of the most useful lessons in practical mathematics. If a child is required to draw a figure on double the scale of any given figure, he sees that if he takes the base of his drawing double the length of the base of the original figure, then all the parts of his figure will be respectively double the corresponding parts of the original figure; and so on to other cases: in this way he will draw a figure of the same form as the original, the only difference between the two figures being that one is drawn upon a larger scale than the other.

10. *After drawing from copy, the pupils should draw from familiar objects.*

Copying is the first step in drawing. It is one of the easiest acts of imitation. When a pupil makes a copy of a drawing, he merely transfers the lines on one sheet of paper to another; but in this exercise of the faculty of imitation some reasoning and judgment are involved, especially if the pupil is called upon to use certain artifices of construction. To give a representation of a natural object, just as it appears to us, is much more difficult than to make a copy of a drawing already made of the object. The lines which we draw in this case are not the exact counterparts of the corresponding lines in the object, but merely representations of them, drawn so as to convey to the organs of perception an impression of the object. In order to understand how this effect is produced, we must be acquainted with the laws of vision, with the effects of light and shade, and with certain principles of perspective relating to the foreshortening of lines, &c. In a course of elementary instruction in drawing, therefore, the pupil should first exercise his eye and hand in the *copying* of certain geometrical forms and simple drawings of natural objects, before he commences drawing from actual objects. It is, moreover, necessary that the pupil should first copy the drawing of a natural object before he proceeds to give a representation of it, as it would appear to him when placed before him. While the pupil is thus acquiring steadiness of hand and accuracy of eye, he is at the same time gradually becoming acquainted with the art of perspective, or the true mode of representing solid figures on a flat surface. In order that the drawing may be of service to the pupil, the object should be placed before him *nearly* in the same position as that in which it is represented in the drawing. A further change of view will sufficiently task the skill of the pupil. The master should be at some pains to show the coincidence of the lines of the representation with the actual appearance. He should show them, for example, why all the vertical lines in the object are also drawn vertical in the picture; why certain horizontal lines in the object are drawn rising or falling, as the case may be, from the horizontal line in the picture; why certain lines in the object are drawn much shorter in the picture than they really are in the object; and so on, as explained in the writer's work on "Drawing for Schools."

The best stand for the drawing models is a common table. They may be raised, if necessary, by placing them on a box, or any rectangular object.

11. *Advantage of small drawings for children.*

Some teachers suspend large drawings before their class to be copied. This plan is in many respects highly eligible for simultaneous instruction when the pupils can be placed directly in front of the drawing; but when this cannot be done, the figure will appear foreshortened and distorted to those pupils on each side of it. It should also be observed, that drawing from a large figure is not strictly an act of imitation, for the copy made by the pupil is what the figure would appear to be, supposing it placed at the same distance from the eye as the copy. Besides, these very large figures are not adapted for home instruction. Now, when each pupil is provided with a drawing, he is able to place it directly before him at the same distance from his eye as the copy which he is about to make; hence he finds it more easy to copy a small drawing so placed than to copy a large drawing suspended at a distance from his eye. But the greatest advantage of small drawings is that they may be taken home by the pupils, and copied in their leisure hours.

CHALK DRAWINGS, EXECUTED HOWEVER ROUGHLY BY THE MASTER ON THE BLACK-BOARD, are really much more efficient means of instruction than the suspending of large drawing sheets before the class.

12. *The pupils should be taught to draw from Models, after the Method of Dupuis.*

A boy may be able to make excellent copies of drawings or pictures, without being able to give anything like a tolerable representation of the simplest natural object; this requires distinct cultivation. Model drawing is the best way of teaching beginners to draw from nature.

The following are some of the advantages of teaching drawing from models: —

(1.) Natural objects are generally too difficult for the learner to begin with; whereas the models can be constructed according to a progressive order of difficulty.

(2.) The models are always under our control; they may be readily placed at any distance from the pupil, or in any desirable position.

(3.) They may be made to represent various geometrical forms, and owing to this uniformity of shape, the drawings taken from one set of models may be compared with those taken from another set.

(4.) The models may be used in combination with one another, and thus the different parts of a complex figure may be first drawn separately before they are drawn in combination.

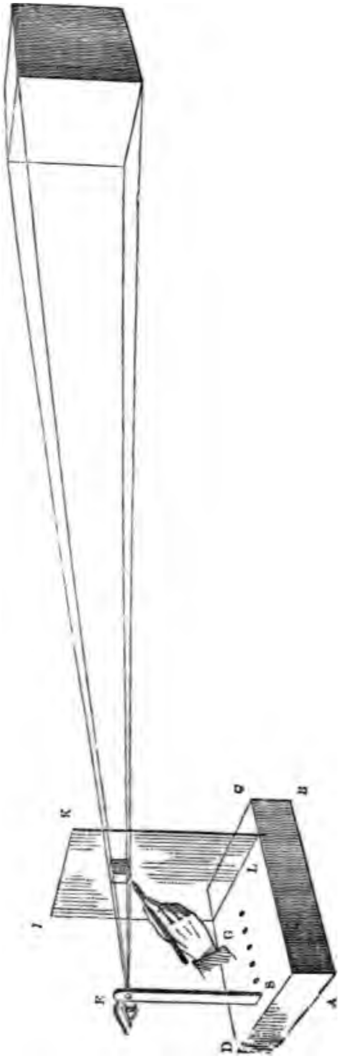
(5.) The system of model drawing is especially calculated to exercise and develop the powers of observation and comparison, and forms the best introduction to a system of mathematical perspective.

The models, which the pupils are required to draw, are made of wood, or some other light material; and they are placed in a proper position before the pupil, in order to be drawn by him, on paper, or on a common slate. He is taught certain easy processes, by which he is enabled to find out the apparent size and shape of the various parts of the model, so as to give its true representation on paper.

The method of drawing from models was invented by M. Dupuis. Its grand feature consists in making perspective drawing a matter of observation on the part of the pupil, rather than a subject of mathematical reasoning. The principles, practice, and advantages of the method are fully explained in the author's work on "Drawing for Schools."

The following simple apparatus has been used by the author to render the principles of model drawing more apparent. The construction is so very simple, that it may be made for a few pence.

A B C D is a block of wood about 9 inches long, 3 inches broad, and 1½ inches thick; a saw cut, G L, is made square across, for receiving the pane of glass G L I K, upon


K
G
H
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G
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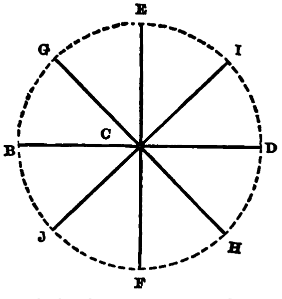
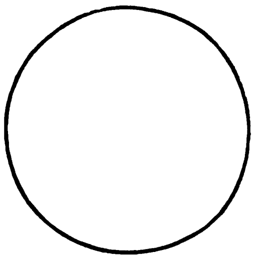
D
A

which the representations of the objects are to be drawn; E S is a small pin of wood, having a hole at the top to which the eye is applied, fixed at the distance of about 6 inches from the glass pane; the surface of the pane is covered with a thin coating of gum, for the purpose of retaining the chalk lines traced upon it. When any drawing is to be rubbed off, it is only necessary to warm the surface of the gum before the fire, so as to make it perfectly free from moisture, then lightly rub off the chalk marks with a silk handkerchief. Let the advanced pupils occasionally practise drawing from simple objects, with this simple apparatus, and they will insensibly acquire a knowledge of the principles and practice of perspective representations.

Model lessons on Drawing.

(1.) *On the drawing of a Circle.* I am going to show you how to draw a circle with the hand. Draw the





straight line B D equal to the length of the diameter of the circle which you wish to make. Find the middle or centre C of this line. Do you think that I have got the middle exactly? James Carter says that I have taken the point too much to the left. I think that he is right, therefore I shall place it a little further to the right. I must now look at your slates to see that you are all going along with me.

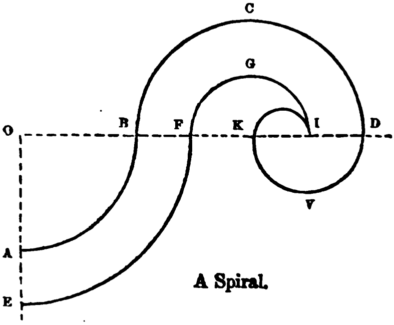
Through the centre C draw the straight line E C F, perpendicular to B D. Now, to which side does E F lean? Please, sir (we may suppose the pupil to answer), it leans neither to the one side nor the other; that is to say, E F is at right angles to B D.

Teacher. How many right angles have we got here?

Pupil. Four right angles.

Teacher. Now I am going to cut these right angles through their middles by two straight lines: thus we have G H and I J. Mark off C G, C E, C I. C H, and C J, each equal to C D or C B. What will these distances be called? Trace the circle lightly through these points. Having done this, I must mend some portions before I attempt to draw the full line. I now proceed to finish off the circumference. We may now rub out the lines of construction, just as a builder takes away his scaffolding after he has completed the house.

The teacher may now put a few questions relative to the various lines connected with the circle.



A Spiral.

(2.) *On the drawing of a Spiral.* I am going to show you how to draw a spiral. Draw the dotted lines O D and O E at right angles to each other. With O as the centre, draw the concentric quadrants E F and A B of any convenient size; — (what do you mean by concentric?)— mark off F K, K I, and I D, each equal to B F; then draw the semicircles B C D, F G I, D V K, and K I; which will be the spiral required to be drawn.

Teacher. Of what parts is the exterior spiral A B C D V K I composed?

Pupil. It is composed of one quadrant and three semicircles.

Teacher. What is the size of the semicircle B C D as compared with the semicircle D V K?

Pupil. The diameter B D of the first is double the diameter K D of the second.

WRITING.

This branch of education may be thoroughly taught, in a common school, on the collective system. In conducting such lessons as writing, it is desirable that the master should exercise his classes, in all their movements, in habits of military precision and promptitude. In order to follow out the collective system in relation to this subject, the writing to be copied should be written by the master on the black-board, or large sheets containing copies should be suspended in front of the class. After the copy books and pens have been distributed, the master gives the order,—"open copy books;" then all the pupils in the class must obey the order at the same moment: the master may next say,—"take up pens;" then all the pupils must, in like manner, promptly and exactly obey the order: he may next say,—"prepare to write;" every boy, in this case, must place his copy book and his own body in the proper position for writing, this position having been previously explained by the master; he may now say,—"begin writing;" and all the class commence their work at the same moment. Similar orders may be given when the pupils have finished the first line. The master must then rapidly inspect the copy books, giving a hint to each pupil as he passes him, and afterwards he will make some more enlarged remarks upon the writing, addressed to the whole class, as it generally happens that the faults of one boy are common to the whole class. We do not mean to say that an intelligent teacher will slavishly follow this plan, or indeed any other plan that might be proposed—at the same time it should be observed, that the plan here given must contain the leading elements of every efficient plan which might be devised.

Every teacher will, of course, adapt the details of a plan to suit his peculiar tastes and habits of thought.

Mulhauser's method of writing seems to be well adapted for giving the first elementary lessons in writing; but the method should not be carried beyond its legitimate limits. In order to give a finish to writing, no method can supersede that of carefully prepared copy heads, such as those given by Butterworth, Foster, Story, and others.

PRACTICAL GEOMETRY AND MENSURATION.

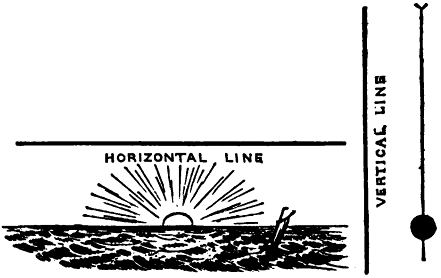
The pupils should be taught these subjects after the collective system of teaching, followed up by individual exercises. Each pupil in the class should be provided with a pair of compasses, a ruler, and if possible a scale, having a diagonal scale of equal parts on one side, and a protractor on the other, and a little triangular square (see the author's Geometry and Mensuration). The master should be provided with a large pair of wooden compasses, having a chalk holder at the extremity of one of its legs; a long ruler; a large wooden protractor, which need not be *very* exactly made, and a large T square. He should construct his figures without the aid of any other instruments.

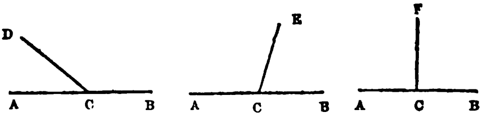
The master should draw the geometrical problem on the black-board on a large scale, taking care to excite the attention of the pupils in the class, time after time, by putting various suggestive questions to them, such as we have given in connection with the teaching of drawing, &c.

Familiar and common-sense expositions (without aspiring to strictness of demonstration) should be given relative to the methods of construction. In the same manner, the leading problems of mensuration should be taught.

A lesson on Geometry. Subject — A perpendicular, a right angle. Illustrative method. From the concrete to the abstract.

When a man stands upright, he stands *perpendicular* to the floor. The floor of this room is level or *horizontal;* the wall of the room is *vertical,* and stands perpendicular to the level *floor.* The surface of still water is level or *horizontal;* a plummet line hangs *vertically;* the plummet *line* is perpendicular to the surface of the *water.* It will be seen that the plummet *line* neither inclines to the one side nor to *the other,* that is to say, the openings or *angles,* which it forms with the horizontal *line,* on each side, are *equal* to each other.



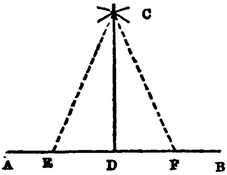


Is the line C D perpendicular to A B? To which side does it incline? On which side does it form the greater angle or opening? To which side does C E incline? On which side does C E make the greater angle? Whether does C D or C E approach nearer to the perpendicular position? To which side does the line C F incline? To neither the one side nor the other. Then the angles on each side are *equal* to each other, and they are called *right angles.*

A lesson on Practical Geometry. Subject — To erect a perpendicular. Mixed method. Illustrative, constructive, &c.

I want to show you how to draw one line perpendicular to another. From the given point, or mark, D, in the straight line A B, I want to erect a *perpendicular*, that is, a line which will neither incline to the one side nor to the other.

On each side of D, I take D F, of the same length as D E. (The teacher is supposed to construct the figure as he describes it.) I open the legs of my compasses so that the opening between the *points* shall be greater than D E or D F; I place one point of my compasses on the mark or *point* E, and sweep a portion of a *circle;* I now place the point of the *compasses* on the mark or *point* F, and sweep a portion of another *circle*, cutting the former in a *point* which we shall call C; I join D and C, and the line D C will be *perpendicular* to the line A B.



I shall now explain to you why this mode of construction causes C D to be perpendicular to A B.

There are two things in the construction which cause the line D C to be perpendicular to A B: First, D E is of the same length as D F; second, the two circles were swept with the same radius or opening of the *compasses*. These two things cause the point C to lie directly over, or *perpendicularly* over the *point* D. If the second radius or opening of the compasses be taken less than the first opening (here the teacher must describe the

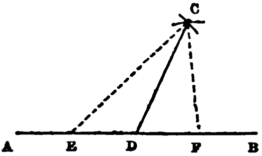


figure), how will the line C D be inclined? It will be inclined towards the side F. Why? For the point where the two circles cut each other must lie nearer to F than to E. But when the openings of the compasses are the same, the point where the circles *cut each other* lies neither more towards F than *towards* E, and therefore the line D C is equally inclined to A B, that is to say, D C is *perpendicular to* A B.

Observations. Although this may not be what is called a logical demonstration, yet it most certainly gives the pupil A SUFFICIENT REASON for concluding that the line C D is perpendicular to A B. It is further worthy of observation, that such familiar expositions prepare the mind of the pupil for following more strictly logical demonstrations. I am well aware, that some persons are disposed to say that the shortest course is to carry the pupil through Euclid's Elements; but, after the experience of a quarter of a century as a mathematical lecturer, I have no hesitation in saying, that it is quite impracticable to teach young persons the elements of Euclid until they have gone over some initiatory course of demonstrative geometry, by which the mind of the pupil is led to pass from the concrete to the abstract. It is true that this initiatory process of demonstration is always lengthy; but *it acts like a mechanical power, for what we lose in time we gain in force.*

ALGEBRA.

This subject should be taught by a demonstrative method,—proceeding from the concrete to the abstract. The leading simple elementary operations of quantities should be first taught in connection with the solution of problems.

A lesson on Algebra. Subject—Equations, &c.

Problem. A man bought a cow and a horse for 28*l.*; now the horse cost twice as much as the cow and 4*l.* more; what did he pay for the cow?

Here the problem tells us that the value of the cow and the horse equals *twenty-eight pounds.* I may then write this down in the form of an equation, thus —

$$\text{one cow} + \text{one horse} = 28l.$$

Now I must put the horse into cows. What does the question tell us about the value of the horse? That a horse is worth two cows and 4*l.* more. Then I may write down —

$$\text{one horse} = 2\ \text{cows} + 4l.$$

We shall now write down, or *substitute,* this value of the horse in the first equation; thus

$$\text{one cow} + 2\ \text{cows} + 4l. = 28l.$$

What have I here substituted for one horse?

Putting the cows together, we have

$$3\ \text{cows} + 4l. = 28l.$$

If I take away the 4*l.* from the left side of this equation, what must I take away from the other side to keep up the equality? Let us do this, — then

$$3\ \text{cows} = 24l.,$$
$$\therefore \quad \text{one cow} = \tfrac{1}{3}\ \text{of}\ 24l. = 8l.$$

that is to say, the value of the cow is 8*l.*

Or thus more symbolically. Proceeding as before, we have

$$\text{one cow} + \text{one horse} = 28l.$$

Let us, for the sake of convenience, put x for the value of the cow in pounds, that is, let

$$\text{one cow} = x,$$
$$\text{but one horse} = 2\ \text{cows} + 4l.,$$
$$\therefore \quad \text{one horse} = 2\,x + 4l.$$

Why do I put $2\,x$ for the value of "2 cows?" Because x pounds is the value of *one cow,* and therefore $2\,x$ pounds will be the value of *two cows.*

Now let us put these values for *the cow* and *the horse* in our first equation. First writing x for *the cow,* and $2\,x + 4l.$ for *the horse,* we get

$$x + 2\,x + 4l. = 28l.,$$
$$\therefore \quad 3\,x + 4l. = 28l.$$

What have I done here? Exactly, an x added to $2x$ will make $3x$, in the same manner as *one cow* added to *two cows* will make *three cows.*

In order to leave nothing but x's on the left side of this equation, what must I do?

$$\therefore\ 3x = 24l.,$$
$$\therefore\quad x = \tfrac{1}{3} \text{ of } 24l. = 8l.,$$

that is to say, the value of the cow is 8*l.*

MECHANICAL AND PHYSICAL SCIENCE.

All our instructions in these sciences should be based on observation and experiment. The methods of interrogation and ellipses are best adapted for giving familiar lectures on these subjects.

A lesson on Chemistry. Subject. — To distinguish iron from copper. Mixed method — Experimental, Interrogative, Elliptical, &c.

PROPERTIES DERIVED FROM OBSERVATION. What are the names of these metals? The one is called *iron*, the other *copper*. The colour of the copper is *reddish-yellow*, that of the iron *dark grey*. They have some properties in common. They both have a peculiar glitter or lustre, called the *metallic lustre*, or the lustre common to all *metals*. Polished wood has a lustre, but it is not the *metallic lustre*. I can readily scratch the copper with my knife, but I cannot so easily scratch the iron; what inference do you draw from this? Copper is softer than iron. They may be both hammered out,— they are both *malleable*. It takes a very intense heat to melt them,— they are not easily *melted* or fused. They are both drawn out into wires, — they are both *ductile*.

USES. Name the uses of iron? Name the uses of copper? On what properties do these uses depend?

ORES OF IRON AND COPPER. This is a specimen of iron *ore*, that of copper *ore;* the one is called iron pyrites, the other *copper pyrites;* the one is called sulphuret of iron, being composed of *sulphur and iron*, the other is called sulphuret of copper, being composed of *sulphur and copper*. Compare their colours! The copper ore has the deeper *yellow colour*. I can scratch the copper ore with my knife, but I cannot scratch the iron ore, — *the copper ore is softer than the iron ore.*

CHEMICAL PROPERTIES OR TESTS. Here is a solution of sulphate of copper. What is its colour? what is its composition? Here is a solution of sulphate of iron. What is its colour, &c.?

Here are two glasses, — to the first I add a little of the solution of the sulphate of iron, and to the other a little of the sulphate of copper. To these I add a few drops of the tincture of nut galls, — the first becomes *black*, — the second is *slightly discoloured.*

Here are two glasses containing pure water, — to the first I add a few drops of *sulphate of iron*, and to the second a few drops of *sulphate of copper*. To these I first add a drop of ammonia, — a light precipitate is formed *in both glasses*. What are these precipitates? Now so far we have not arrived at any decided test as to the nature of the two substances; but I now add to each a larger quantity of ammonia, — in the first glass the precipitate is *redissolved*, and a beautiful deep *blue* colour is formed,— in the second glass the precipitate remains *unchanged*. And so on.

NATURAL HISTORY.*

NATURAL HISTORY, as a branch of Education, has been almost entirely neglected in our Schools, although it treats of objects with which we come daily and hourly into contact, throughout the whole course of our lives. Much time is devoted to subjects which have but a remote and indirect bearing on the pupil's future career; yet how few there are who come out of the Elementary, or even Grammar School, with a knowledge of the name and history of the little plant which grows at the side of the play-ground, or of the rock which appears in the neighbouring valley.

For the neglect of Natural History in our Schools,

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* Communicated by the Author's brother, Mr. George Tate, F.G.S.

Training Colleges are not a little to blame, for they have rarely given it an adequate place in their curriculum; and the consequence has been that few teachers have acquired a knowledge of the subject, or become imbued with a love of Natural History pursuits. The technicalities of the science have proved a stumbling block to many, who have not enjoyed the advantages of special collegiate instruction. But an intelligent teacher need not be scared away by such difficulties, for they may be as easily surmounted as the preliminary obstacles which bar the entrance into mathematics or classics. Indeed, we know no class of men for whom Natural History studies are more fitted than for teachers. Most of them have sufficient leisure for these pursuits, which have this peculiar advantage, that while they improve the mind they give health to the body. What more beneficial to the teacher, than to escape from the crowded schoolroom, and to wander over green fields and wild moors, through shady forests, or along the solitary shore, and to examine, as he passes, the lovely flower, blushing beneath the hedge; the rock forming the picturesque cliff; the insects flitting in the air; or the finny tribes sporting in the waters!

The introduction of Natural History as a prominent subject of school instruction would, we are persuaded, not only impart valuable knowledge, but also improve the taste of the pupils, and furnish them with healthful sources of enjoyment. It would be an efficient means of mental training, well suited to children; for it would teach how to observe, to note qualities and forms, to mark agreements and differences, and how to describe natural objects in precise and distinctive language. The higher faculties of the mind are also called into exercise, in discovering the relations which the varied productions of nature have to each other, and in grouping and classifying them according to these relations.

There is probably no occupation which might not be more or less benefited by a knowledge of Natural History; it has a direct bearing on medicine, agriculture, gardening, mining, and, indeed, most mechanical employments;

but to the emigrant—and in these days, many of our fellow-countrymen seek in distant colonies a more profitable field of labour than they can find in their native land—it is of incalculable value. Through ignorance of minerals, quantities of Iron Pyrites, which have the yellow glittering aspect of the noble metal, but which are comparatively worthless, have been sent from distant lands to England, under the belief that they contained gold. Not long ago, a Californian adventurer picked up a bright transparent crystal, which he imagined was a diamond, and for which he refused 200*l.*; he brought it to England, and learnt that it was worthless. A little knowledge of Mineralogy, which might have been given in any Elementary School, would have taught him that this crystal, which he prized so highly, was only a six-sided prism of quartz, and that it could not be a diamond, since this valuable gem never assumes that form.

It is no slight recommendation of Natural History, that the materials for its study are inexhaustible, and that they lie in every man's path. Hence it is, that he who has received elementary instruction in this department of science is ever brought into connection with the beautiful, the wonderful, and the perfect; he can interrogate Nature, and understand her responses; he is surrounded with familiar friends—though solitary, he is never alone—rocks, plants, and animals, are to him ministering spirits, full of hidden meanings, and ready to contribute to his improvement and happiness.

To children, Natural History can be most efficiently taught out of doors. Here, if anywhere, pleasure may be combined with instruction. For this purpose, rambles should be taken into the country pretty frequently, when the weather is favourable. Let Botany, for example, be the subject studied: the teacher should visit with his pupils some pleasant spot where the wild flowers grow in profusion; the pupils should gather these plants, and the teacher, seated, it may be, on a grassy hillock, or on a jutting rock, should, making use of the materials collected, explain their character, structure, and relations. Nor will the intelligent teacher neglect to link with direct instruction, the legends, and the historical or remarkable events of the district, so as to invest the natural objects with local associations, giving a deeper interest to his subject. The rector of an academy in Scotland, who is an accomplished Entomologist, acts the peripatetic philosopher with his pupils, and from his school several good naturalists have gone forth; and we read not long ago, an account of a National School in the south of England, where the children had made no inconsiderable progress in Botany. We are persuaded that Natural History could be taught to children even from an early age, without materially interfering with the time devoted to other branches; and we may hereafter enter into more practical details on the subject. In the meantime, we would ask any intelligent teacher—would not the adoption of some such plan as we propose have a healthful influence both on himself and his pupils? Would it not relieve the tedium of the ordinary school routine, carried out as it is for the most part in confined apartments; and while opening out new sources of instruction and enjoyment, would it not lay the foundation of much future happiness? Let him fairly attempt to work out our suggestion, and we are sure of a satisfactory result.

PART V.

ON SCHOOL ORGANIZATION AND DISCIPLINE.

SCHOOL ORGANIZATION.

SCHOOL organization has respect to all those mechanical arrangements, appliances, and artifices, whereby the business of instruction may be facilitated and promoted. The following subjects deserve especial attention:—

I. SCHOOL-BUILDINGS, AND FITTINGS.

The best form of a schoolroom is that of an oblong. It should be fitted up with parallel rows of desks, in the form of a gallery, for the different classes; and a raised platform should be erected at one end, from which the master can overlook the whole school. The desks should be arranged into five or six divisions, to suit the number of classes in the school. The room should contain at least 7 square feet of area for each pupil to be accommodated; and the space of 18 inches should be allowed for each boy on the forms. The class divisions should be about 9 feet in length, and may contain from three to five rows of parallel desks. Every good school should have a separate room called a *class-room*, fitted up with a gallery having parallel desks, for the purpose of enabling the master to give instruction to his pupil teachers, and occasional special lessons or lectures to the advanced pupils of the school. This class-room should be fitted up with an open fire-place, a large black-board, a lecture table, and cases for holding experimental and other kinds of school apparatus.

The schoolroom should be well warmed and thoroughly ventilated. The most economical and efficient means of warming and ventilating schoolrooms, are those stoves which attain both of these objects at the same time. There have been some excellent stoves of this kind introduced into some of our large workshops, but we are not aware that they have as yet been sufficiently employed in our schools.

Some schoolrooms are divided into three equal portions, the first containing space for the children to stand in semicircular drafts; the second, seats with desks for writing; and the third, a gallery for simultaneous instruction. But it appears to us that this triple division interferes very much with the order, quiet, and discipline of the school. A series of parallel desks, arranged in the gallery form, and subdivided for the accommodation of the different classes, under proper management, not only answers all the *desirable* purposes of this triple division, but also secures the uniform and continuous action of all the classes, without any of that noise and confusion necessarily attendant upon the changes of position, &c., connected with the standing drafts.

The schoolroom should be constructed so as to deaden, as much as possible, the echo of the teachers' or the children's voices; and the school should be in a quiet, cheerful, and healthy neighbourhood. The ground should be thoroughly drained, and complete water closets should be provided for the use of the children. A playground should be attached to the schools, where the children may amuse themselves with games and gymnastic exercises, at the times set apart for that purpose; and where also the boys should be daily exercised at drill.

The best plans of schools have been given by Sir James Kay Shuttleworth, in the Minutes of Council for the years 1839, 1840, 1844, and 1847–8. Professor Moseley's tripartite plan is admirably adapted to the higher class of elementary schools.

II. SCHOOL APPARATUS.

THE BLACK-BOARD should be supported on an easel in front of the class. It should be sufficiently large, with a smooth black surface capable of receiving chalk marks. All diagrams and expositions should be distinctly sketched upon the black-board with prepared chalk. The teacher should be provided with a pointer, and a duster, which should be in a damp state when used for rubbing out the chalk marks.

THE TEXT-BOOKS, MAPS, DIAGRAMS, MODELS, AND PICTORIAL ILLUSTRATIONS, should be in keeping with the master's peculiar system of instruction.

THE SCHOOL LIBRARY should contain books suited to the attainments, capabilities, and future pursuits of the pupils in the school.

THE EXPERIMENTAL APPARATUS should, at first, be of the most simple and inexpensive description. It is better that a master should learn to use a little apparatus with smartness and precision, than to be constantly handling a great deal with awkwardness and indecision. It is important to bear in mind, that reading alone will not give a man the power of manipulation. Let the teacher begin with the simplest possible apparatus, and then go on progressively until he is able to manipulate with perfect instruments.

List of apparatus for general use.

Map of the World, of Europe, of England, of Palestine, of the British Colonies, and a raised physical map of England.

A terrestrial globe, black-boards for all the classes in the school, slate pencils, black-lead pencils, pen-holders, pencil-holders, earthenware inkwells, strings for slates, prepared chalk, admission-book, class register books, attendance and absence register, routines of lessons, visiter's book, &c.

Register of admission, progress, and withdrawal. The following (A) form, recommended by Professor Moseley, is so arranged as to show the progress of each child in passing through the various classes in the school. Messrs. Longman have published this register in a neat and convenient form. It will be understood that more breadth must be allowed for the columns than is given in the form A.

A. *Register of Admission, Progress, and Withdrawal.*

Name.	Index Number.	Date of Admission.	Age at Admission.	Residence.	Occupation of Parents.	Previous Instruction.	Time under previous Instruction.	Date of the Child's Admission to each Class.						Withdrawal.						Signature of the Child.		Remarks.
								6	5	4	3	2	1	Date.	Age.	Time in School.	Class.	Reason.	Proposed Occupation.	At the time of Admission.	At the time of Withdrawal.	

B. *Register of Daily Attendance, &c.*

No.	Name (of Child in the Class).	From Monday ——— to Saturday ———						No. of School Days.								Paid as School Fees.	(And so on to all the weeks in the quarter.)	Quarterly Total for each Child.		Remarks. on Studies and Progress during the Quarter.
		M.	T.	W.	Th	F.	S.	Present.	Absent.						Total.			No. School. Days present.	Paid as School Fees.	
									Excused.					Without excuse.						
									Sick.	Weather.	Home excuse.	Poverty of Parents.	Other reasons.							
																				Signed——— Schoolmaster.
																				Managers.
I.	No. present daily.																			Quarterly results.
II.	Average No. present per week.*																			II.
III.	No. present at all during the week.†																			III.
IV.	Average No. days present at all by each child.‡																			IV.
V.	No. on Register.§																			V.
VI.	Total Receipt by School Fees.																			VI.

* Add the totals of all the columns (morning and afternoon), and divide by two. † Count the names opposite to which there is *any* dot during the week.

‡ Divide the number entered for "Average Number present per Week," by the number of names referred to in the last preceding note. § Count names (all).

Class register of daily attendance, &c. This form (B) is also recommended by Professor Moseley. Each class should be provided with this register, and the teacher, or pupil teacher, superintending the particular class, should fill in the columns. It will be observed that the register extends over the whole quarter. This register should always be kept under lock and key when not in use. The time table of each class should be entered in its register; a certain number of fly-leaves being left at the beginning for the purpose.

Weekly summary of attendance, &c. for each quarter. Table C gives the form of this register. The averages, &c., to be entered in these columns, should be filled in at the end of every week, and then the *result*, found by adding together the numbers in the columns, should be entered.

C. *Weekly Summary of Attendance, &c., for each Quarter.*

First Quarter.					
	From Monday, the —— Day of ——, to Saturday, the —— Day of ——.				
Class.	Average No. present.	No. present at all.	Average No. of Days attended by each Child present at all.	No on Register.	Received by School Fees.
1					
2					
Result.					

(And so on to all the Weeks in the First Quarter.)

(And so on to the Second, Third, and Fourth Quarters.)

Quarterly summary of attendance, &c. The form of this register is given in Table E. Each of the quarterly tables should be filled up at the end of each quarter. Nothing has to be done except to write in, and add up, the weekly *results* of the preceding register (C).

Annual summary of attendance, &c. Table E gives the form of this register. In this case, the quarterly results are filled in, and then added up to give the results for the year.

D. *Quarterly Summary of Attendance, &c.*

Result of each Week.	Average Number present.	Number present at all.	Average Number of Days attended by each Child present at all.	Number of Children on Register.	Received by School Fees.		
					£	s.	d.
From Monday, the —— Day of ——, to Saturday, the —— Day of ——.							
(And so on to all the Weeks in the Quarter.)							
Result for the First Quarter.							

(And so on to all the Four Quarters.)

E. *Annual Summary of Attendance, &c.*

Quarter.	Average Number present.	Number present at all.	Average Number of Days attended by each Child present at all.	Number on Register.	Received by School Fees.		
					£	s.	d.
1							
2							
3							
4							
Result for Year.							

respective classes, and the teacher should enter the routine of his class in the fly-leaves left at the beginning of his class register. The routines should be framed not only with regard to the attainments of the respective classes, but should also have a due regard to the harmonious operation of the whole school and the proper alternation of subjects, according to the principles which we have explained in relation to school routines (see p. 109). Table F is a specimen of a routine of lessons for the first class of an ordinary elementary school. Routines of lessons should, to a certain extent, be framed to suit the taste and capabilities of the master.

F. *Specimen of a Time Table or Daily Routine of Lessons.* 1*st Class.*

TIME OF THE LESSONS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.
9 to 9¾	Prayers and Religious Instruction.	Prayers, &c.	Prayers, &c.	Prayers, &c.	Prayers, &c.
9¾ to 10½	Arithmetic.	Arithmetic.	Arithmetic.	Arithmetic.	Arithmetic.
10½ to 11	Writing.	Writing.	Writing.	Writing.	Writing.
11 to 11½	Algebra.	Mensuration.	Algebra.	Mensuration.	Algebra.
11½ to 12	Grammar.	Grammar.	Grammar.	Grammar.	Grammar.
2 to 2½	Reading, Dictation, &c.	Reading, &c.	Reading, &c.	Reading, &c.	Reading, &c.
2½ to 3	Drawing.	Map Drawing.	Drawing and Practical Geometry.	Map Drawing.	Drawing and Practical Geometry.
3 to 3½	Drill, &c.	Drill, &c.	Drill, &c.	Drill, &c.	Drill, &c.
3½ to 4	Familiar Science.	Mental Arithmetic.	Geography.	Familiar Science.	Geography.
4 to 4¾	History, with Reproduction of the Lesson in Writing.	Industrial Mechanics.	History, &c.	Industrial Mechanics.	Application of Arithmetic.
4¾ to 5	Prayers, &c.	Prayers, &c.	Prayers, &c.	Prayers, &c.	Prayers, &c.

CLASSIFICATION.

Without classification, the collective system of instruction would be worse than useless. The first business of the schoolmaster, therefore, is to throw his pupils into classes, where the boys in each class shall have the same, or as nearly as possible the same, attainments and capabilities. The number of classes, in a school, must depend upon its size as well as upon the differences of age and attainments of the pupils. A very minute division is neither desirable nor practicable. It is not at all requisite, to secure efficient instruction, that all the pupils in a class should have exactly the same attainments ; for a good teacher can always adapt his instruction to suit boys whose attainments do not differ widely from each other. As a general rule, a large school may contain about eight classes, and a school of an average size about five. The pupils in each class should continue there for every subject of study until promoted to the next class. Under a proper system of management, the subdivision of classes into drafts, for the purpose of attaining a more perfect classification, is rarely necessary, and, in my opinion, should only be resorted to in special cases.

BASIS OF CLASSIFICATION. The proper basis of classification, as we have already explained (see p. 106), should be the mental power and capabilities of the pupils. The following method of classification is simple, practicable, and sufficiently exact for all ordinary cases : —

First, arrange the pupils into three great divisions ; second, subdivide each division into two or more classes. Thus, in a school of 120 boys, we should have, on an average, 40 boys in each division, and 20 boys in each class.

TESTS OR QUALIFICATIONS FOR THE THREE DIVISIONS. Reading and general intelligence may be taken as the best tests for fixing the division to which any child may belong. Reading words of one and two syllables may be taken as the qualification for the third or lowest division ; reading words of two and three syllables, or reading simple sentences with intelligence, as the qualification for the second division; and reading words of four or any higher number of syllables, or reading the higher class books with tolerable intelligence, as the qualification for the first or highest division.

TESTS OR QUALIFICATIONS FOR THE CLASSES. In this case arithmetic forms the best basis of classification. Here a knowledge of principles, not less than mechanical dexterity, should enter into our estimate of qualifications.

If the *third division* contains two classes, the lower class may contain those children that have not commenced slate arithmetic, or who have only commenced the subject of mental calculation; the higher class may contain those children who have commenced slate arithmetic, or who have made some progress in mental arithmetic.

If the *second division* contains two classes, the lower class may contain those children that have not completed the four elementary rules; the higher class those that have commenced the subject of reduction.

If the *first division* contains two classes, the lower class may contain those boys who are capable of working questions in the rule of three, without the use of fractions; and the higher class those that are capable of understanding fractions and arithmetical problems generally.

THE PUPIL TEACHERS.

The pupil teachers should always be selected for their general intelligence, good conduct, and aptitude for teaching. The number of pupil teachers must, of course, depend upon the size of the school; for a school of 120 boys, there should be at least four pupil teachers. It is also desirable that there should be a class of assistant pupil teachers, who may be considered in a state of probation, or preparation, for the office of pupil teacher. These assistant pupil teachers may have a draft of a class given to them, for teaching certain subjects which may require a greater subdivision of labour. The master should constantly bear in mind that the organization and efficiency of his school greatly depend upon the training of his pupil teachers.

SCHOOL DISCIPLINE.

School discipline includes all those means and appliances whereby the order and healthful action of a school are maintained and promoted.

I. ORDER, &c.

Under this head may be classed, obedience, punctuality, silence, cleanliness, politeness, and general good conduct. It is quite unnecessary to explain in detail how these matters of discipline should be carried out in a school. The following general principles are well deserving the teacher's notice.

1. *The teacher should endeavour to establish a principle of limited self-government in his school.* This will occasionally relieve him of some of his most onerous duties ; but even this is the least important end which will be gained by such a plan. The great end to be attained by it, is to interest the pupils in the management and proper discipline of the school, — to identify them, as it were, with the good name of the school, to have it said that the order of the-school is mainly due to their own good sense and self-government.

One of the most obvious plans for carrying out this plan, is for the teacher to delegate (under supervision) his authority, in relation to order, &c., to his pupil teachers. But the principle should not stop here : he should endeavour to enlist the co-operation of all the advanced pupils, and to govern the whole school by its public opinion. The following story given by Jacob Abbott, about a hat peg, affords us a graphic illustration of the principle which we should wish to see carried out. We do not suppose that a hat peg would ever be the occasion of a dispute, in any English school, but this does not affect the principle intended to be illustrated.

The preceptor of an academy was sitting at his desk, at the close of the school, while the pupils were putting up their books and leaving the room, when a boy came in with angry looks, and, with his hat in his hand bruised and dusty, advanced to the master's desk, and complained that one of his companions had thrown down his hat upon the floor, and had almost spoilt it.

The teacher looked calmly at the mischief, and then asked how it happened.

"I don't know, sir; I hung it upon my nail, and he pulled it down."

"I wish you would ask him to come here," said the teacher; "ask him pleasantly."

The accused soon came in, and the two boys stood together before the master.

"There seems to be some difficulty between you two boys, about a nail to hang your hats upon. I suppose each of you think it is your own nail."

"Yes, sir," said both the boys.

"It will be more convenient for me to talk with you about it to-morrow, than to-night, if you are willing to wait. Besides, we can examine it more calmly then. But if we put it off till then, you must not talk about it in the meantime, blaming one another, and keeping up the irritation that you feel. Are you both willing to leave it just where it is, till to-morrow, and try to forget all about it till then? I expect I shall find you both to blame."

The boys reluctantly consented. The next day the master heard the case and settled it, so far as it related to the two boys. It was easily settled in the morning, for they had had time to get calm, and were, after sleeping away their anger, rather ashamed of the whole affair, and very desirous to have it forgotten.

That day, when the hour for transaction of business came, the teacher stated to the school, that it was necessary to take some measures to provide each boy with a nail for his hat. In order to show that it was necessary, he related the circumstances of the quarrel which had occurred the day before. He did this, not with such an air and manner as to convey the impression that his object was to find fault with the boys, or to expose their misconduct, but to show the necessity of doing something to remedy the evil, which had been the cause of so unpleasant an occurrence. Still, though he said nothing in the way of reproach or reprehension, and did not name the boys, but merely gave a cool and impartial narrative of the facts,—the effect, very evidently, was to bring such quarrels into discredit. A calm review of misconduct, after the excitement has gone by, will do more to bring it into disgrace, than the most violent invectives and reproaches, directed against individuals guilty of it.

"Now, boys," continued the master, "will you assist me in making arrangements to prevent the recurrence of all temptations of this kind hereafter? It is plain that every boy ought to have a nail appropriated expressly to his use. The first thing to be done is to ascertain whether there are enough for all. I should like, therefore, to have two committees appointed,—one to count and report the number of nails in the entry, and also how much room there is for more. The other is to ascertain the number of scholars in school. They can count all who are here, and, by observing the vacant desks, they can ascertain the number absent. When this investigation is made, I will tell you what to do next."

The boys seemed pleased with the plan, and the committees were appointed, two members on each. The master took care to give the quarrellers some share in the work, apparently forgetting, from this time, the unpleasant occurrence which had brought up the subject.

When the boys came to tell him their results, he asked them to make a little memorandum, in writing, as he might forget, before the time came for reading them. They brought him presently a rough scrap of paper, with the figures marked upon it. He told them he should forget which was the number of the nails, and which the number of the scholars unless they wrote it down.

"It is the custom among men," said he, "to make out their report, in such a case, fully so that it would explain itself; and I should like you, if you are willing, to make out yours a little more distinctly.

Accordingly, after a little additional explanation, the boys made another attempt, and presently returned, with something like the following:—

"*The committee for counting the nails report as follows*:—

"*Number of nails* - - 35.
"*Room for* - - - 15."

The other report was very similar, though somewhat rudely written and expressed, and both were satisfactory to the preceptor, as he plainly showed by the manner in which he received them.

I need not finish the description of this case, by narrating, particularly, the reading of the reports, the appointment of a committee to assign the nails, and to paste up the names of the scholars, one to each. The work, in such a case, might be done in recesses, and out of school hours, and though, at first, the teacher will find that it is as much trouble to accomplish business in this way as it would be to attend to it directly himself, yet, after a very little experience, he will find that his pupils will acquire dexterity and readiness, and will be able to render him very material assistance in the accomplishment of his plans.

2. *As far as possible, the discipline of the school should be maintained without the aid of direct punishments; and its healthful tone and action should be rarely promoted by the application of such powerful stimulants as rewards or flattering commendations.*

We have already explained pretty fully our views relative to the subject of rewards and punishments (see p. 115, &c.). We have therefore only further to add, that when the teacher really finds it necessary that he should have recourse to punishments, in order to maintain the discipline of his school, he should act upon some graduated system of secondary punishments, before he inflicts the severest of them. Sometimes a look, from the teacher, will be sufficient to make a boy sensible of his fault ; a reproof may supersede the necessity of any further punishment ; the withdrawal of some privilege may do more in correcting a boy of his error, than the use of the rod ; and a moderate infliction of some corporal punishment may be more efficacious in counteracting crime, than a higher degree of degrading torture.

Whenever rewards are bestowed on boys of a superior merit and character, they should be given as mementoes of good conduct, and not as possessing any value apart from the object for which they are given.

3. *Drill exercises are highly calculated to promote the order and healthful action of a school.*

Besides the usual drill exercises in the play-ground, the teacher should frequently relieve the monotony of his lessons, by requiring his pupils, time after time, to go through certain simple gymnastic movements, such as, "arms folded," "hands on desks," "stand," "sit," "hands up," "down," "shoulders up," "right hand up," "left up," "turn," "front," &c.

Before a teacher commences a lesson, he should drill the children into good order ; amongst other things they should be commanded to sit upright, or to sit exactly in front of their desks, or to place their feet in a proper position, or to sit at proper distances from each other, or to place their books or slates properly — and so on.

They should be marched in and out of their classes in regular military order. Every gymnastic movement should be performed simultaneously, and with smartness and precision. All this tends very much to foster habits of order and prompt obedience.

THE END.

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